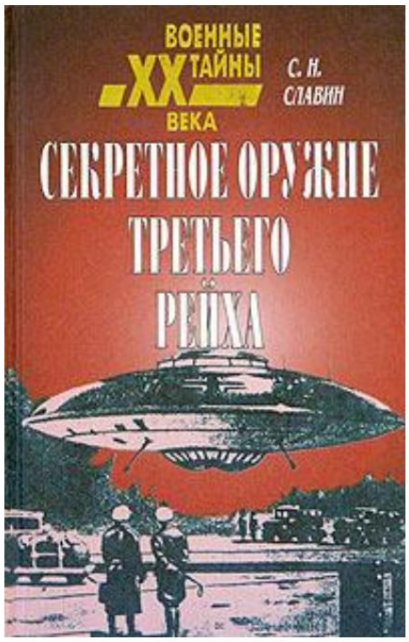
Stanislav Nikolaevich Slavin
Secret weapon of the Third Reich

Military secrets of the XX century -



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annotation

What types of secret weapons were developed in the laboratories of the Third Reich? Could German physicists have made the atomic bomb faster than the Americans? Was there a top-secret Nazi base on the sixth continent? Were the astronauts of the Third Reich capable of taking off into space? How did German specialists manage to get ahead of all countries in the production of rocket technology? The author of the book, designed for the widest readership, tries to answer these and many other questions.

Slavin Stanislav Nikolaevich.
Secret weapon of the Third Reich

Foreword

- You are a German from head to toe, armored infantry, a manufacturer of vehicles, you have nerves, I think, of a different composition. Listen, Wolf, fall into the hands of people like you, Garin's apparatus, whatever you do...

"Germany will never accept humiliation! **Alexey Tolstoy,**
"Hyperboloid of Engineer Garin"

"... The SS man peered at the documents for a long time and meticulously. Then he held them back and threw up his right hand, clicking his heels smartly. Goering grimaced in displeasure - that was already the third "filter" of the guards - but Himmler, who was sitting in front, was unperturbed: order is order.

The Horch, shining with the nickel of its radiator, drove through the open gates and drove almost silently along the concrete pavement of the huge airfield, wet from the recent rain. In the sky

the first stars lit up.

Behind the neat rows of Messerschmitts-262, lights gleamed in the distance. strange structure, resembling a huge sloping overpass, steeply going up. The beam of the spotlight picked out the triangular bulk standing at its base, the tip of the nose directed into the darkening skies. The beam showed a swastika in a white circle on the black side of the engine.

The man in the back seat of the heavy Horch, glancing briefly at the frowning Goering, shivered shiveringly. No, not from the cold night freshness. It was just the hour that was decisive for him. A

kilometer away, at the launch complex, a tanker tanker drove away, and the technicians carefully washed their hands in rubber gloves under tight

water jets from hoses.

A lean, wiry man in dark overalls, thumping with his soles on the steps of a steep ladder, disappeared into the cockpit of a short-winged apparatus, as if strapped on top of the fuselage of a triangular giant. There, in the lighted pilot's nest, he flipped the switches. The green control lights on the control panel light up. This meant that the black, sharp-sided bomb in the belly of the short-winged machine was in perfect order. It contained a heavy nickel-sheathed uranium ball and explosive lenses. Nowotny's oberet shrugged his shoulders—the

white rubberized spacesuit fit pretty well. "Remember, you must avenge the barbaric destruction of the ancient cities of the Fatherland!" - Himmler told him parting words. The assistants lowered a massive, Teutonic-like, barrel-shaped helmet with a transparent visor from above. The incoming oxygen hissed - life support had long been debugged like clockwork. Novotny knew the task by heart. The coordinates of the point of entry into the atmosphere ... Heading for the radio beacon ... Dropping the bomb - over New York and immediately - the afterburner of the engine to jump across the Pacific Ocean and Asia.

The calendar on the wall showed April 12, 1947 ... "

Agree, all this looks very intriguing. Yes, and the book "The Broken Sword of the Empire", where this quote is taken from, is made firmly. It is felt that the person who wrote it - for some reason he preferred to hide his name under the pseudonym Maxim Kalashnikov - professionally owns a pen. And he collected interesting facts. The question is, did he interpret them correctly? Of course,

everyone is entitled to their own point of view. And now, fortunately, everyone has the opportunity to express it publicly - the range of periodicals and publishers today is quite wide. And I'm not here to discuss the legitimacy of the concept of that book. My task is different - to tell you, if possible, the truth about the secret arsenals of the Third Reich, to show on facts, documents, eyewitness accounts, how true those assumptions are, the essence of which can be reduced to such a judgment: “A little more and the Third Reich would really create a“ miracle weapon" with which he could gain dominance over the entire planet. Is it so? The answer to the question asked is

not as

simple and unambiguous as it might seem at first. And the point is not only that history does not have a subjunctive mood, but, therefore, it is useless to fantasize about “what would happen if”. The main difficulty is different: over the past half century, many events of the Second World War have acquired so many legends, speculations, and even outright hoaxes that it can be very difficult to distinguish truth from lies. Moreover, many witnesses of those events have already died, and the archives burned down in the flames of the world war or disappeared later under mysterious or simply obscure circumstances. And yet, reality can be distinguished from fiction.

Help in that ... the authors themselves of certain versions. Upon careful reading, it becomes obvious: many of them "pierce", are unable to make ends meet.

What inconsistencies can be seen in the above snippet? And at least those. The author

relates the events he describes to April 12, 1947 - there is a direct indication of this in the text. As follows from the context, Germany had by then won the

World War II, having won dominance over the whole of Eurasia together with Japan. It remained to crush the last stronghold of the "free world" - America.

And for this, a historically proven recipe is offered - an atomic bomb should fall on the United States. And the country instantly capitulates - this is exactly what happened to Japan in reality. However... In the cockpit

of a missile super-bomber (by the way, in dark overalls or a white spacesuit?) A man with the surname Novotny could not sit. And Hitler himself and his inner circle with surnames starting with "G" - Himmler, Goering, Goebbels, etc. - carefully monitored the observance of the law on the purity of the race, and here, judging by the surname, Slavic roots are clearly traced - the pilot, probably, originally from Czechoslovakia. (True, he could have been an Austrian. Then Hitler, who himself was a native of this country, might have allowed the pilot to participate in a risky expedition.) And finally, the flight, as far as I understand, was to

take place on an apparatus designed by E. Zenger, who really developed his project in the 1940s together with the mathematician I. Bredt. According to the plan, a hundred-ton hypersonic triangular jet aircraft,

28 meters long, was launched using a powerful booster. Gaining a speed of 6 kilometers per second (Gagarin entered orbit at a speed of 7.9 kilometers per second), the Zenger bomber jumped into space to a height of 160 kilometers and switched to non-motorized flight along a gentle trajectory. He "ricocheted" from the dense layers of the atmosphere, making giant leaps, like a stone "baking pancakes" on the surface of the water. Already on the fifth "jump" the device would be 12.3 thousand kilometers from the starting point, on the ninth - 15.8 thousand.

But where are these machines? Zenger lived until 1964, witnessed the well-known space flights, but there is no technical implementation to this day - the same "shuttles" are only a pale shadow of what the talented designer planned to do.

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And yet the myths are very tenacious. They beckon with their mystery, understatement, the opportunity for everyone to continue them, offering more and more new versions of the development of certain events. And before starting a conversation about how and what really happened in Germany during the Third Reich, let me offer you a brief summary of the most interesting assumptions and hypotheses on this topic. So, some researchers

believe that Adolf Hitler was ... none other than the messenger of hell, who intended to enslave humanity, so to speak, stake out territory until the second coming of Jesus Christ. It was for this that he was given a hint on how to make a "wonder weapon" - an atomic bomb.

To achieve his goal, Hitler used all sorts of means, including the technological assistance of certain forces, thanks to which in the Third Reich they were able to create the most modern ships, submarines, tanks, guns, radars, computers, hyperboloids, rocket launchers and even ... "flying saucers", one of which was sent directly to Mars (obviously for emergency help).

Moreover, according to one of the myths, these "saucers", which, as you know, continue to fly to this day, were initially based in Antarctica, where the Nazis created a long-term base during the war. And when we and the Americans created the first spy satellites that scanned the entire surface of the Earth, then the UFO-Nauts had no choice but to relocate to the far side of the Moon, where they are to this day. Moreover, it is quite possible that the lunar base itself was built by no longer unfinished Nazis. They took advantage of a ready-made building, which is a branch, an outpost of a certain civilization that lives on Mars or somewhere else far away, on the outskirts of the solar system. And now the alien invaders have not abandoned their nightmarish plans. It is they who stand at the origins of the revival

of the Nazi movement in many countries, including ours. And they, the Blackshirts, on occasion can rely on the arsenals of weapons created by the servants of the Third Reich and placed in advance, securely hidden in different

parts of the world - in the Norwegian fjords, on the ranches of Argentina, on the islands of Southeast Asia and the Caribbean, on the coast of the Arctic Ocean and Antarctica, and even at the bottom of the Baltic ...

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A summary of such stories could go on and on. But let's pause for a moment to reflect on this question: "Is it really possible to turn back history?" The fantastic story of Lyubov and Yevgeny Lukin "Missionaries" made me think

about this personally. It tells about how once missionaries landed on the tropical islands of Polynesia, who forced the local natives to develop their civilization at an accelerated pace so that they could resist the conquistadors when they attacked these islands. The venture was a success. And when the caravels approached the islands, they were met by nothing less than ... aircraft carrier pirogues, on board of which

were based jet gliders with missiles on board. And the story turned in a different way: it is no longer the whites who turn the Indians into slavery, but the tattooed islanders become the masters of the situation ...

Of course, this whole story is nothing more than a fairy tale. But the hint in it is made completely transparent ... And here is something to think about.

Therefore, let's try together to go back half a century ago and see what and how it really was and how it could be. Let the imagination serve as our time machine, but let the fuel for it be those facts that became known relatively recently and which during the time of the Third Reich were state secrets both in Germany and in the USSR.

Barrel and armor

The main bet in the "lightning war" - blitzkrieg - the Nazis did on their mechanized columns, abundantly saturated with armored vehicles. And as the practice of the Second World War showed, in many respects they were right. But where does this insight come from? Were the designers of the Third Reich and the "Tigers", "Panthers" and other "animals" they created so omnipotent? .. From a cannon - through Paris?

Usually one has only to

talk in the company of "techies" about super-large guns,
someone will certainly remember: -

Ah, "Big Bertha"! She fired at Paris ... But, according

to Doctor of Technical Sciences, Professor V. G. Malikov, there are at least two errors in such a judgment. Firstly, it was not the Big Bertha that fired at the French capital, but the Colossal; secondly, "Berta" could not spit out a shell for more than a hundred kilometers at all. In general, it was like this ... The night of March 23, 1917 passed

without the howl of sirens announcing the next air raid. However ... “at 7 o’clock in the morning I heard the strongest, as it seemed to me, bomb explosion that shook the windows of our apartment on the Caille Bourbon,” recalled Lieutenant General A. A. Ignatiev, at that time Russia’s military attaché in France. - The sirens were silent, and we were even more surprised when exactly at 7 hours 15 minutes the same blow was heard, and at 7 hours 30 minutes - the third, somewhat more distant. On this sunny morning, Paris froze from the ongoing and incomprehensible strong explosions of some unknown bombs. These were shells fired from ultra-long-range German guns. The idea to expose Paris to artillery shelling, thereby demonstrating its military power, and to

influence the French morally, arose in the Kaiser's headquarters in the spring of 1916. On the initiative of General E. Ludendorff, it was decided to make a large-caliber gun that could reach Paris because of the front line, which then ran 90 kilometers from the capital of France.

The development of the gun was entrusted to the Krupp company, which in 1914 manufactured a naval gun that fired at 56 kilometers. In order to hit Paris, it was necessary to significantly increase the initial velocity of the projectile. As you know, it depends on the length of the barrel. The calculation showed that the supergun will need a barrel with a length of at least 34 meters! It was impossible to cast such a barrel. Therefore, they decided to make it composite. Behind the five-meter charging chamber was an internal threaded pipe consisting of several parts. A six-meter smooth-walled muzzle was attached to it. From the breech, the barrel was covered with a 17-meter casing. An overly elongated, but relatively

thin barrel weighing ... 138 tons sagged from its own weight. It even had to be supported with steel cables. After each shot, he hesitated for 2–3 minutes. At the end of the shooting, they even had to remove it with the help of gantry cranes and straighten it.

Under the influence of hot gases formed during the combustion of a 250-kilogram powder charge, friction against the walls of the barrel of a projectile weighing 118 kilograms, the diameter of the barrel changed. If immediately after manufacturing the caliber of the supergun was 210 millimeters, then after firing it increased to 214 millimeters, so subsequent shells had to be made getting thicker.

The long-range monster was taken to the firing position on a railway carriage platform weighing 256 tons, mounted on 18 pairs of wheels. They also perceived the energy of bestowal. There were no special technical problems with horizontal guidance. What about vertical? In the place from which they intended to shell Paris, the Germans secretly concreted the area. And on this “cushion” they made a turning circle for a huge platform and a gun mounted on it. It was served by 60 coastal defense commanders, led by an admiral.

Before each shot, some specialists first carefully examined the barrel, projectile and charge, others calculated the trajectory taking into account weather reports (direction, wind speed). Having taken off from the barrel, raised at 52 ° 30 relative to the horizon, the projectile reached a height of 20 kilometers in 20 seconds, and after 90 seconds it reached the top of the trajectory - 40 kilometers. Then the projectile re-entered the atmosphere and, accelerating, fell on the target at a speed of 922 meters per second. He completed the entire flight over a distance of 150 kilometers in 176 seconds. The

first shell fell on Republic Square. In total, the Germans fired 367 shells in the capital of France, with a third of them hitting the suburbs. 256 Parisians were killed, 620 people were injured, but the Kaiser command never achieved the goal set by Ludendorff. On the contrary, in July-August 1918, the Allies launched an offensive that brought Germany to the brink of defeat.

True, several hundred citizens left Paris. Rumors spread about the mysterious supergun "Big Bertha", allegedly named after A. Krupp's wife. However, as already mentioned, "Big (or" Tolstoy ") Berta" was called the short-barreled, 420-mm siege mortar, which the German army used during the siege of the Belgian fortress of Liege. And three ultra-long-range 210-mm Colossal cannons fired at the French capital. After the conclusion of a truce with the allies, the guns were dismantled, their details and documents were hidden.

Nevertheless, the effect produced led to the fact that during the First World War, ultra-long-range guns began to be developed in other countries. Before the end of the war, French specialists managed to make a heavy 210-mm gun mounted on a multi-axle railway transporter. The range of his fire was to be at least 100 kilometers. However, this supergun never made it to the front line - it turned out to be so massive that no bridge could withstand it during transportation.

English engineers preferred the caliber 203 mm. The barrel length of the English gun was 122 caliber. This was enough for 109-kilogram projectiles to fly 110–120 kilometers at an initial speed of 1,500 meters per second. In Russia, back in 1911, military engineer V. Trofimov

proposed to the Main Artillery Directorate a project for a heavy gun, the shells of which would be raised in

stratosphere and hit targets at a distance of more than 100 kilometers. However, the project was rejected. Later, having learned about the shelling of Paris with Colossal cannons, V. Trofimov was the first to explain the essence of ultra-long-range shooting, emphasizing that there was reason to suspect German engineers of borrowing his ideas published before the war.

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One way or another, the Germans themselves did not forget about the success achieved, and by the beginning of World War II they had developed and built several more ultra-long-range guns. So, in 1942, during the siege of Sevastopol, the Nazis used, among other guns, the 800-mm Dora artillery system. The seven-ton shells of this gun pierced 100-cm armor. The weight of the gun exceeded 1350 tons. The installation moved on a platform with 80 wheels. The calculation was a team of 450 soldiers and officers. However, 80 shells fired at the heroic Sevastopol did not justify the hopes of the Nazi command. The gun was soon transported

to Leningrad, where the famous rail war began. Our soldiers were opposed by a strong and experienced enemy. The front came so close to Leningrad that the center of the city was within the radius of action of the Nazi divisional and corps artillery.

In addition, the Germans constantly brought high-powered guns with a caliber of up to 420 millimeters to the front line. Both German railway installations (240–380 mm) and their captured French counterparts (305–370 mm) participated in the shelling. September 15, 1941 Leningrad was under fire for 18 hours 32 minutes, September 17 - 18 hours 33 minutes. The artillery of the Leningrad Front had a firing range of only 20 kilometers, so that the entire burden of the confrontation fell on the sailors and railroad workers. The mobility of the "rail" batteries and the branching of the local transport hub provided a wide maneuver for the guns. If necessary, new paths were laid. By the summer of

1942, the batteries had learned to open fire within a minute after detecting the outbreak of enemy guns. The Nazis did not doze off either: at the beginning of the siege, they began firing only 20–25 minutes after the first volleys of Soviet cannons from railway transporters, and a year later this interval was reduced by a factor of three. But in response, our artillery accelerated the deployment to the firing

position and the withdrawal from it. Such progress was achieved due to the transition from sequential execution of individual operations to parallel. Everything was done to ensure the rapid movement of the conveyor on rails. The result was almost 7-fold savings (4 minutes instead of the regular 25)! Often, in order to comply with the camouflage, the batteries departed "self-propelled". The opening of fire was masked by the detonation of imitation explosives or volleys of medium-caliber guns. The sappers arranged a false battery position 700-900 meters ahead of the current one. The first shots were fired from it, and when the enemy, answering, “lit up”, a large caliber came into play.

Such tactical "highlights" brought good results. By October 1, 1943, the 19th battery made 118 exits to combat positions and in 89 cases was subjected to return fire. The Germans fired up to 1500 shells, but not a single transporter was ever put out of action - the art of camouflage turned out to be so high! Well, already in 1944-1945, the Soviet "rail guns" completely dominated. During the breaking of the blockade of Leningrad in the winter of 1944, the batteries fired 6,798 shells at the enemy. The railroad took part in the storming of Vyborg, provided landing operations on the islands of the Gulf of Finland, fired at the blockaded garrisons of Memel, Libau and Koenigsberg. By the end of the war, the railway artillery brigade had 356-mm and 305-mm installations - 3 each, 180-mm and 152-mm - 12, 130-mm - 39. Moreover, not a

single calculation with a gun with a caliber of more than 152 millimeters ... Such brilliant results could not but attract the attention of the command. Developers

unique technology were awarded the proper honors. But few people today know how many interesting samples remained on paper. Back in 1931,

the Main Artillery Directorate (GAU) issued to the people's commissariats an "Indicative task for the design of railway installations." On February 8, 1938, Marshal Kulik approved the tactical and technical requirements for the TP-1 356-mm rail gun and the TG-1 500-mm howitzer. The design of the swinging part of both guns was entrusted to the Special Technical Bureau of the UNKVD of the Leningrad Region, and the transporter was assigned to TsKB-19, located right in the famous Kresty prison. Later this "sharaga" was renamed OKB-172.

Working drawings for both systems were signed in January 1940. And in the summer of 1941, they planned to conduct tests. But the outbreak of war disrupted the plans. Manufacturers of super-weapons - the Leningrad plant "Barrikada" and Novokramatorsky mechanical plant - switched to the production of other products. Already cast material parts of TP-1 and TG-1 were mothballed ...

Moreover, the experience of the Second World War showed not very good prospects for the use of ultra-long-range artillery. The same "Dora" and her two sisters, at the first threat of breaking the Leningrad blockade, had to be taken to Germany, where they were blown up by the end of the war. Not the

best fate awaited other superguns. Thus, the gun, which was intended to bombard London and appeared on the English Channel coast in early 1945, initially worried the allies. Still would! The machine had a barrel length of 130 meters, and a 150 mm caliber projectile weighed 140 kilograms. However, the very first shot ended in a barrel rupture and they did not return to this venture again!

Finally, at the very end of World War II, several 600-mm Karl self-propelled guns entered service with the Wehrmacht. However, they turned out to be clumsy, not effective enough and were soon captured by our units.

Acquaintance with captured "mastodons" may have served as an impetus for the fact that in 1951 TsKB-34 began to design a 406-mm railway installation SM-3b. To calculate its ballistic characteristics, we used data from a similar gun from the unfinished battleship Sovetsky Soyuz. For the first time, the artillery system had a double recoil (the barrel rolled back along the cradle, and the upper machine slid along the lower one) and special fire control devices associated with the Redan-3 radar. At the same time, they developed the 305-mm SM-31 installation, which also had a double recoil, and the 180-mm TM-2-180 gun.

But in the mid-1950s, due to the new position of the military-political leadership headed by N. S. Khrushchev (“rockets instead of guns”), all work on railway, as well as naval and coastal heavy artillery was curtailed. By the time of the termination of funding, the mentioned installations had not yet been produced, but their drawings were already being prepared for transfer to factories.

Nevertheless, heavy "rail guns" remained in service with the Navy for a long time. So, even before January 1, 1984, sailors operated eleven TM-1-180s (8 in the Black Sea and 3 in the Baltic) and two TM-3-12s (in the Gulf of Finland).

Both guns - based on a copy of these "last swallows" of the domestic railway artillery - are placed in an eternal parking lot, near the Krasnoflotsky fort (formerly Krasnaya Gorka) near St. Petersburg.

Land battleships

A historian who turns to the study of the military equipment of fascist Germany is waiting for mountains of folders with documents on which the inscriptions are full: “Not subject to disclosure”, “Secret”, “Top secret”, “Only for the high command”, etc. The abundance of this material involuntarily creates the impression of albeit a secret, but stormy, unrestrained activity of the Nazi anthill. What kind of projects are not here! However, during the war years, at exhibitions of mangled weapons delivered from all fronts

older people saw a much more modest picture. But almost all types of trophies were brought to these exhibitions. The mystery of this discrepancy begins to be revealed when you try

to learn more

get acquainted with what was proposed for equipping the ground forces of the fascist army.

* * *

According to paragraph 170 of the Treaty of Versailles, Germany, which was defeated in the First World War, was forbidden to own and build tanks. But already in the mid-1920s, strange cars appeared at secret Reichswehr exercises, painted with camouflage spots and outwardly resembling French Renault tanks.

However, the intelligence of the victorious countries soon calmed down: the mysterious machines turned out to be just models of rails, plywood and fabric. They served for educational purposes. To increase the plausibility, they were put on car chassis, or even just on bicycles.
wheels.

By 1929, the Reichswehr had formed entire "tank" battalions from similar "dummies" mounted on the basis of Opel and Ganomag cars. And when new “secret” armored vehicles were defiantly paraded near the Polish border during the 1932 maneuvers, it turned out that they were just Adler cars disguised as combat vehicles.

Of course, Germany was occasionally reminded of the Treaty of Versailles, but German diplomats
they invariably declared: everything that happens is only an appearance, a “war game”.

Meanwhile, the situation was much more serious - the game was needed by the unfinished warriors for
in order to work out the tactics of future battles at least on fake cars ...

Subsequently, when the Wehrmacht acquired real tanks, their plywood prototypes came in handy to misinform the enemy. The same role was played in 1941 by "dummy" with steel sides, which were hung on light army vehicles.

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While the army was playing war, the bosses of German industry were preparing much more dangerous toys for it. Outwardly, it looked harmless: they suddenly fell in love with heavy "commercial" trucks and caterpillar "agricultural" tractors. But it was on them that the designs of engines, transmissions, chassis and other components of future tanks were tested. However, the tractor is different from the tractor. Some of them were created in the strictest secrecy under a covert weapons program. We are talking about cars produced

in 1926 and 1929. Officially, they were called heavy and light tractors, but they looked like a rifle to a rake: they were the first tanks built in violation of the Treaty of Versailles and now by no means plywood.

In the early 1930s, the Ordnance Department ordered another "agricultural" tractor from several firms. And when the Nazis openly crossed out the articles of the Treaty of Versailles, it turned into a T-I tank and immediately went into mass production. Another "tractor" - Las-100 - underwent a similar metamorphosis, turning into a T-II tank. Among the secret developments, the so-called machines of the “company commander” and “battalion commander” also appeared. Here we again encounter pseudo-

designations - this time the prototypes of the T-III medium tank and the heavy T-IV. Their history is also instructive. In order to somehow get money for their production, the Nazis went on a brazen deception not only of other peoples, but also of their own.

On August 1, 1938, the leader of the fascist trade unions, Ley, announced: “Every German worker must become the owner of a small Volkswagen car within three years. There was a big buzz around Lay's statement. Newspapers praised the "people's car", and at the same time the talents of its designer Ferdinand Porsche.

A unified procedure for the acquisition of a Volkswagen was established: every week from

Withhold the wages of a worker by 5 marks until a certain amount is accumulated (about 1,000 marks). Then the future owner, as promised, will be given a token that guarantees the receipt of the car as it is made.

However, although Ferdinand Porsche did build a wonderful car - it was the later legendary "beetle", now experiencing its second birth - the treasured tokens turned out to be worthless pieces of metal, and Ley's statement was an example of shameless social demagogy. Having collected several hundred million marks from the working people, the fascist government set up a gigantic enterprise with these funds. But it released only a few dozen Volkswagens, which the Fuhrer immediately gave away to his close associates. And then it completely switched to the production of T-III and T-IV tanks. The Nazis brought the old Prussian tradition of drill and cane discipline to the point of absurdity, putting into practice the so-called principle

of "fuhrerism". In industry and transport, the employers were declared "leaders" of various ranks, to whom the workers were obliged to blindly obey. One of these "fuhrers" was Porsche. In 1940, he headed the commission of the Ministry of Armaments for the design of new tanks. At the same time, under his leadership, the first sketches of the heavy Tiger tank were made. But before the attack on our country, this machine was only in the draft, on paper. Only after the Nazis collided with the famous Soviet T-34 and KB tanks, feverish work began on the creation of "tigers", "panthers" and self-propelled guns for the Wehrmacht. However, they were also not very lucky ... In 1965, the major English television company ITV showed the documentary "Tigers are on fire." The director of the film, Anthony Firth, then told reporters about the work on this film, which shows in detail how, during the Second World

War, the Nazis were preparing Operation

Citadel - an offensive on the Kursk Bulge using the latest military equipment: “tigers”, “panthers”, “ elephants" and "Ferdinands".

English filmmakers used the shorthand records of the meeting of the German General Staff with the participation of Hitler and reproduced this scene from them, and also presented in detail the course of the Battle of Kursk (the authors of the film received some of the shots about the battle itself from Soviet film archives). And when Anthony Firth was asked about the origin of the title credit of his picture, he replied: “It happened in the following way. One of us, who was working on documents for the script, remembered that in one of the Soviet newspapers he once came across a headline that attracted him with its brevity, energy and at the same time poetic imagery. We settled in the British Museum and began leafing through all the Soviet newspapers for the summer of 1943. And finally, in the Izvestia of July 9, they found what they were looking for - the Tigers are on fire. That was the title of an essay by the front-line correspondent of the newspaper Viktor Poltoratsky. The next day after the press conference, the film was

shown on television. And the whole of England watched the "tigers" burn and how, according to the script, "received a pardon" precisely because of the defeat of the Nazis on the Eastern Front.

The history of the preparation of Operation Citadel and its complete failure bring us back to the topic of the confrontation between the creators of Soviet tanks and German weapons specialists. The fact is that the Citadel operation plan was not a secret for the Soviet Supreme High Command, and our designers learned about the tactical and technical characteristics of the Tiger tanks back in 1942, long before the Battle of Kursk. But when exactly and how? Here, despite the abundance of memoirs and eyewitness accounts, there is still a lot of unclear and

mysterious.

In the book "Chronicle of the Chelyabinsk Tractor Plant" - it produced our heavy tanks during the war years - it is said that the meeting of designers, at which the first data about the "tigers" appeared, took place in the fall of 1942. The exact date is not specified, the source of such valuable and, most importantly, the first information about the plans of the Krupp engineer Ferdinand Porsche, the chief designer of the armored beast, is also not named.

However, some of the historians hint that in October 1942 in Germany, in the vicinity of the small town of Juteborg, the Nazis filmed a propaganda

a documentary film capturing the "invulnerability" of its new product - the "tigers". Anti-tank and field artillery fired on prototypes of these vehicles, and they, as if nothing had happened, crushed the guns with their tracks. The text that accompanied these shots inspired the idea of the invincibility of the "tigers" and the futility of fighting them. Was the

Soviet command aware of the film even before the appearance of new tanks at the front? It's hard to say, because it could well have been captured much later as a trophy document ... And how can one judge the tactical and technical characteristics of a new weapon by a propaganda film?

A more reliable source of data about the "tigers" most likely became ordinary front-line reports. The fact is that on August 23, 1942, a meeting was held at Hitler's headquarters, at which they discussed the actions of German troops to capture Leningrad. Among other things, the Fuhrer then stated: “I am very concerned about the actions of the Soviets in connection with the attack on Leningrad. The preparation cannot remain unknown. The reaction could be fierce resistance on the Volkhov front ... This front must be held under all circumstances. Tiger tanks, of which the army group will receive nine at first, are suitable to eliminate any tank breakthrough. At the time when

this meeting was going on, at the Krupp plant, the best craftsmen were assembling the first prototypes of Ferdinand Porsche cars, one by one. Albert Speer, the former Minister of Armaments of the "Third Reich", spoke about what happened after this in his memoirs:

> “As always with the appearance of new weapons, Hitler expected a sensation from the Tigers. He colorfully described to us how the Soviet 76-millimeter cannons, penetrating through the frontal armor of T-IV tanks even at a great distance, would send shell after shell in vain, and how, finally, the “tigers” would crush the anti-tank defense nests. The General Staff drew attention to the fact that too narrow caterpillars, due to the swampy terrain on both sides of the road, made it impossible to maneuver. Hitler dismissed these objections.

As a result, when the "tigers" went on the first attack, "the Russians with complete calmness let the tanks past the battery, and then hit the less protected sides of the first and last" tigers "with accurate hits. The remaining four tanks could not move forward or backward and were soon also knocked out. It was a complete failure…”

Of course, the Nazi general does not name the main characters in this story from our side - he simply did not know them. The most interesting thing is that this episode was mentioned rather sparingly for a long time in our press.

We find evidence of this in the memoirs of Marshals of the Soviet Union G. K. Zhukov and K. A. Meretskov, Marshal of Artillery G. F. Odintsov, Colonel General V. Z. Romanovsky. As far as one can judge from the descriptions, this is not always about the same episode, but all memoirists attribute the cases of the capture of the "tigers" to January 1943.

The secret was more or less fully revealed in his memoirs only by Marshal G.K. Zhukov, who at that time coordinated the actions of the Leningrad and Volkhov fronts to break the blockade of Leningrad:

> “On January 16, I was informed that between Workers' Settlements No. 5 and 6, our artillerymen knocked out a tank, which in its appearance differed sharply from the types of enemy combat vehicles known to us, and the Nazis made all kinds of attempts to evacuate it to their rear.
>
> I became interested in this and ordered the creation of a special group consisting of a rifle platoon with four tanks, which was tasked with capturing a wrecked enemy tank, towing it to the location of our troops, and then carefully examining it. On the night of January 17, a group
>
> led by senior lieutenant Kosarev began to carry out a combat mission. The enemy kept this section of the terrain under continuous fire. However, the enemy vehicle was

delivered to our location. As a result of

studying the tank and the form, selected in the snow, we found that the Nazi command for testing transferred to the Volkhov Front an experimental model of the new heavy tank "Tiger" number one. The tank was sent to a research site, where its vulnerabilities were empirically established. Later, in the Battle of Kursk, the Nazi command used "tigers" in large numbers. However, our soldiers boldly entered into confrontation with them, knowing their especially vulnerable spots. Wanting to know the details of the events at the training ground, I asked for an explanation from the lieutenant general of the tank troops P.K. Voroshilov, who led the survey of the "tiger". Pyotr Klimentievich said that the tank's high-speed, maneuverable, striking qualities had been

carefully studied. The words of the marshal "experimentally established his vulnerabilities" must also be understood in the sense that the "tiger" was riddled with artillery shells of various calibers from all sides.

Here's what else came up. The turret of this baggy machine with its predatory cannon trunk turned slowly. And our tankers were given the following recommendation in advance: as soon as the armored "beast" gives a sighting shot, immediately make a sharp maneuver and, while the German gunner turns the turret, hit the "tiger". This is exactly what the crews of the nimble thirty-fours did later, and, surprisingly, these medium tanks often came out victorious in fights with heavy 55-ton “tigers”.

* * *

And yet, who were those brave gunners who, as Speer writes, “with complete calm let the tanks past the battery”, and then set them on fire with accurate hits? Where, on what sector of the front did this happen? And when? The answer to these questions, oddly

enough, was given by Marshal Guderian in his book "Memoirs of a Soldier". The book of the German general is distinguished by an abundance of technical information, scrupulousness, even pedantry. And this is what he writes:

“In September 1942, the Tiger tank was first used in combat ... Hitler assigned the first Tiger tanks a completely secondary task, namely: to launch a small attack on difficult terrain - in the swampy forests near Leningrad, through which heavy tanks could move in a column one at a time along the clearings, bumping, of course, on the barrels of enemy anti-tank guns placed in these aisles. Heavy unjustified losses and declassification of this combat weapon (in the future it could no longer be used suddenly) -

such are the consequences of the use of new tanks.

So, it turns out that Zhukov was mistaken: the first battle with the "tigers" took place six months before they appeared in the area of workers' settlements.

And now let's try to answer another question - when did the "tigers" appear at the front? To this end, let us turn to the book "Tiger". The History of a Legendary Weapon”, recently published in Germany, more precisely, to the chapter “Four Tiger Tanks on the Northern Front”.

It turns out that the Wehrmacht command sent the first supertanks near Leningrad in 1942. Unloaded on August 23 at the Mga station, four vehicles were placed at the disposal of the 502nd heavy tank battalion, which was ordered to attack the Red Army units. In the area of the village of Sinyavino, they fired at a Soviet reconnaissance detachment from a long distance, but they themselves came under artillery fire. After that, the "Tigers" split up to go around a small hill, but one stopped due to a breakdown in the gearbox, then the engine of the second and the final drive of the third failed. They were evacuated only after dark. By September 15, after the delivery of spare parts by plane, all the "tigers" regained their combat capability. Reinforced by several T-III tanks, they were supposed to strike

at the village of Gaitolovo, moving through a wooded and swampy area.

At dawn on September 22, the "Tigers", accompanied by one T-III, moved along a narrow dam that ran through the swamp. Before they had time to go even a few hundred meters, the T-III was hit and caught fire. Behind him, the "tiger" of the company commander was hit. The engine stalled, and the crew hurriedly abandoned the fired vehicle. The rest of the heavy tanks were also hit, and the lead one got stuck in the swamp with the whole body. It was impossible to pull him out under the fire of Soviet artillery. Upon learning of this, Hitler demanded that the secret weapons of the Wehrmacht in no case fall into

the hands of the Russians. And this order was carried out. Two days later, the soldiers removed optical, electrical and other equipment from the tank, cut off the gun with

an autogenous gun, and blew up the hull. So our first chance to get acquainted with the new weapons in detail was missed. And only in January 1943, when the Soviet troops tried to break through the blockade of Leningrad, the fighters of the 86th tank brigade discovered an unknown tank that had been knocked out and remained on a no-man's land between the workers' settlements No. 5 and 6. Upon learning of this, the command of the Volkhov Front and the representative of the Headquarters of the Supreme High Command, General of the Army G.K. Zhukov, ordered the creation of a special group, headed by Senior Lieutenant A.I. Kosarev. On the night of January 17, having previously neutralized the land mine planted in the engine compartment, our fighters took possession of this machine. Subsequently, the "tiger" was subjected to fire from guns of various calibers

at the training ground in order to reveal its vulnerabilities. And the names of those heroes who prudently missed the tanks and hit them on the sides remain unknown to this day.

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Realizing that the "tigers" can no longer be called a "miracle weapon", Ferdinand Porsche and his associates - among them was Erwin Aders - decided to create a new "supertank".

From 1936 until the end of World War II, Aders served as head of new developments at Henschel & Son in Kassel. In 1937, he left the design of steam locomotives, aircraft and crane equipment to lead the design of the DW-1 heavy breakthrough tank, and the following year, his improved version of the DW-11, which was taken as the basis for the new 30-ton VK-3001 vehicle. (H).

At the beginning of 1940, its chassis was tested, and a few months later the entire vehicle, however, without weapons. Then the company was instructed to create a heavier T-VII tank, weighing up to 65 tons. Suddenly, the Wehrmacht's weapons department changed the task - the new car was supposed to have a mass of no more than 36 tons with armor up to 100 millimeters. It was supposed to be equipped with a 75–55 mm cannon with a conical bore, which made it possible to obtain a high muzzle velocity. At the same time, another armament option was also envisaged - an 88-mm anti-aircraft gun, converted into a tank turret.

On May 26, 1941, the Ordnance Department gave Henschel another order, this time for the 45-ton ViK-4501 tank, duplicating the order with a similar order to the design bureau of F. Porsche. Competitors had to present their cars for testing by the middle of 1942. There was little time left, and both designers decided to use the best that was in the samples they had previously created.

The selection committee preferred Aders' car, which received the official designation T-VI "tiger" model H (special car 181). The second, rejected model of a heavy tank was called the T-VI "tiger" (Porsche), which, apparently, was the cause of confusion with authorship - all the "tigers" were often attributed to the Austrian. The Porsche Tiger had the same combat

weight, armor and armament as the Aders Tiger, but differed in transmission: it was electric, not mechanical, which was used by Henschel. Two Porsche-designed air-cooled gasoline engines were driven by two generators, and the current they generated was fed to traction motors, one for each track. Porsche did not take into account that Germany at war was experiencing a shortage of copper needed for electric transmission, and the engine itself had not

yet been mastered by industry. Therefore, the five "tigers" of the Austrian designer, built in July 1942, were used

only for training tankers.

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While the development of the "tigers" was underway, the Wehrmacht command decided to put a new 88-mm anti-tank gun on a self-propelled chassis, which was distinguished by its large mass (more than 4 tons) and therefore poor maneuverability. An attempt to install it on the chassis of a medium tank T-IV was unsuccessful. It was then that they remembered the Porsche Tiger, which they decided to equip with Maybach liquid-cooled engines with a capacity of 300 horsepower. Without waiting for the test results, on February 6, 1943, the Wehrmacht ordered 90 self-propelled guns "elephant" (elephant) or "tiger" Porsche - "elephant", better known on our front under the name "Ferdinand". "Elephant" was intended to fight tanks at

a distance of 2000 meters or more, because of which it was not equipped with machine guns, which was a gross miscalculation. As part of the 653rd and 654th tank destroyer battalions, the "elephants" took part in the battles on the northern face of the Kursk Bulge, where they suffered heavy losses. Once again they tried to try their hand in the Zhytomyr region, after which the surviving vehicles considered it a good thing to transfer to the Italian front.

Well, what happened to the “tiger” of Aders? The first eight machines were manufactured in August 1942, and in just two years they produced (according to German sources) 1348 "tigers" (including several dozen machines in 1943 produced by Wegmann). In 1942-1943,

the "Tiger" was considered the heaviest battle tank in the world. He also had many shortcomings, in particular, poor cross-country ability. Unlike other German tanks, the "tiger" had no modifications, although in 1944 it changed its name to T-VIE, and during the production process, its engine, commander's cupola and road wheels were unified with the "panther" and a new air filter system was installed. From the very beginning, the Wehrmacht command sought to arm the "Tiger" with an 88-mm cannon 71 caliber long, and in August 1942 the Armaments Directorate developed a specification for a new tank with such a cannon and with an inclined arrangement of armor plates - like on our T-34.

In January 1943, Aders and Porsche received an order for a tank with 150 mm frontal armor. Porsche did it simply by redesigning his "Tiger", but his project was rejected. Then the stubborn designer proposed another version of the combat vehicle, which was initially approved. Moreover, the Wegmann company was even offered to develop a new tower for it, but since Porsche still insisted on using an electric transmission, they again put an end to his brainchild.

The military also rejected the first project of the improved "tiger" Aders. The second option, in fact a new machine, was adopted in 1943, giving it the designation T-VIB "royal tiger". The Henschel company began to produce it in January 1944 and managed to create 485 vehicles before the end of the war. Sometimes the "royal tiger" was called a hybrid of the "panther" (hull shape, engine, road wheels) and "elephant" (88-mm cannon). Our story would be incomplete

without the mention of "stormtiger" and "jagdtiger". The first was the result of the conversion of the T-VIH into a fully armored self-propelled gun with a 380 mm gun, which simultaneously played the role of a rocket launcher. In total, 18 of them were produced in the fall of 1944. An order for an anti-tank self-propelled gun "jagdtigr" (based on the "royal tiger"), armed with a 128-mm cannon, was issued at the beginning of 1943, and by the end of the war the Wehrmacht received 71 combat vehicles of this type, which were considered the heaviest of all ever released on the battlefield. The thickness of her frontal armor reached 250 millimeters!

All these tricks, however, did not help the Nazis to win the Kursk salient. For 50 days of battle in the course of three operations - the defensive Kursk (July 5-23) and the offensive Oryol (July 12 - August 18) and Belgorod-Kharkov (August 3-23), our troops killed the entire "menagerie". But the forces there were collected considerable. Each

of the 12 Wehrmacht tank divisions consisted of 75 to 136 vehicles. These were mainly medium T-IVs and, to a lesser extent, T-IIIs, with about a third being tanks with 50- and 75-mm

short-barreled guns - were considered obsolete. The

Ferdinand tank destroyer was considered novelty; assault 150-millimeter gun "Brumber" based on the T-IV; anti-tank self-propelled gun "Marder-III" based on the Czech tank TNHP; 88 mm "Nashorn"; self-propelled guns with field artillery systems of 150 mm caliber - the Vespe howitzer, the TNHP-based gun and the Nashorn-based howitzer; as well as modifications of the main tanks T-IIIM and T-TVG.

However, in the memory of veterans, the Battle of Kursk is associated with the names of three formidable combat machines: "Tiger", "Panther" and "Ferdinand". What was their number? What were they?

Back in the early 1930s, the creator of the armored forces of the Wehrmacht, G. Guderian, proposed equipping them with two types of tanks: relatively light, with an anti-tank gun, and medium, designed for direct artillery support of the advancing infantry. Experts believed that a 37-mm cannon was enough to effectively destroy enemy anti-personnel and anti-tank weapons. Guderian insisted on a caliber of 50 millimeters. And subsequent fights showed that he was right. Nevertheless, when the T-III tank was ordered from Daimler-Benz, which began mass production in

December 1938, the first samples were equipped with a 37-mm cannon. But already the experience of fighting in Poland showed a clear weakness in weapons, and from April of the following year, the T-III began to be equipped with a 50-mm cannon with a 42-caliber barrel. But against the Soviet tanks and she was powerless. From December 1941, the troops began to receive T-III with a 50-mm cannon, the barrel of which was lengthened to 50 calibers.

1342 T-IIIs with such guns participated in the Battle of Kursk, however, they were also ineffective against our T-34s and KVs. Then the Nazis had to urgently install 75-mm guns with a 24-caliber barrel; it was also used in early modifications of the T-IV. The T-IIIN tank performed the task of artillery escort thanks

to even more powerful artillery weapons. A company of "tigers" was supposed to have 10 such machines. In total, 155 such tanks participated in the Battle of Kursk. The medium 18-20-ton tank T-IV was developed in 1937 at the Krupp

company. At first, these tanks were equipped with a 75-mm short-barreled gun, protected by 15-mm, and then 30- and 20-mm armor. But when their helplessness in battles with Soviet tanks was revealed on the eastern front, in March 1942, modifications appeared with a gun, in which the barrel length reached 48 calibers. The shielding method increased the thickness of the frontal armor to 80 millimeters. Thus, it was possible to equalize the T-IV with its main opponent T-34 in terms of armament and protection. The new German anti-tank gun, equipped with a specially designed sub-caliber projectile, was superior in armor-piercing to the 76.2-mm F-32, F-34 ZIS-5 and ZIS-Z guns that were armed with our “thirty-four”, KB, KV-1S and Su-76. By the beginning of Citadel, the Germans had 841 T-IVs with such a long-barreled gun, which led to heavy losses of our armored vehicles. Assessing the merits of the T-34, the German generals offered to copy it. However, the designers did not listen to them and went their own way, taking as a basis the shape of the hull with large angles of inclination

of the armor plates. Specialists from Daimler-Benz and MAN worked on the new tank, but if the first offered a car that resembled the T-34 both externally and in layout, the second remained true to the German model - the engine in the back, the transmission in front, the turret with weapons - between them. The undercarriage consisted of 8 large road wheels with double torsion bar suspension, arranged in a checkerboard pattern, which ensured an even distribution of pressure on the tracks.

The cannon, specially designed by Rheinmetall, with a barrel length of 70 calibers and a high initial velocity of an armor-piercing projectile, was a masterpiece of artillery; the tower had a polyk rotating with it, which facilitated the work of the loader. After the shot, before opening the shutter, the barrel was purged with compressed air, the spent cartridge case fell into a closing case, where powder gases were removed from it.

This is how the T-V tank appeared - the famous "panther", which was also used

two-way gear and swivel mechanism. This increased the maneuverability of the machine, and hydraulic drives significantly facilitated control.

From August 1943, the Germans began to produce T-VA tanks with an improved commander's turret, reinforced undercarriage and 110 mm armor on the turret. From March 1944 until the end of the war, the T-VG tank was produced, on which the thickness of the upper side armor was increased to 50 millimeters and the driver's inspection hatch was removed from the front sheet. Thanks to a powerful cannon with an excellent optical device, the Panther successfully fought tanks at a distance of 1500-2000 meters.

It was the best tank of the Wehrmacht. In total, about 6,000 Panthers were manufactured, including 850 T-VDs from January to September 1943. A commander's version was produced, on which, having reduced the ammunition load to 64 shots, a second radio station was placed. On the basis of the Panther, repair and recovery vehicles were also made, in which a cargo platform and a winch were mounted

instead of a tower. Panthers T-VD with a combat weight of 43 tons fought

on the Kursk Bulge. In June 1941, as we already know, Germany did not have heavy tanks, although work on them began as early as 1938. "Acquainted" with our KB, the company "Henschel and Son" (leading designer E. Aders) and the famous designer F. Porsche accelerated development and in April 1942 submitted their products for testing. The Aders machine was recognized as the best, and the Henschel plant began production of the T-VIH Tiger, producing 84 tanks by the end of the year, and 647 tanks the following year.

The "Tiger" was armed with a powerful new 88-mm cannon, converted from anti-aircraft guns. The armor was also very solid, but the frontal armor plates did not have rational tilt angles. However, the body with vertical walls was assembled faster during production. In the undercarriage, large-diameter road wheels with an individual torsion bar suspension were used, located, like the Panther, in a checkerboard pattern to improve cross-country ability. For the same purpose, the tracks were made very wide - 720 millimeters. The tank turned out to be overweight, but thanks to a shaftless gearbox, planetary slewing mechanisms with double power supply and a semi-automatic hydraulic servo drive, it was easy to control: neither effort nor high qualifications were required from the driver. Several hundred of the first machines were equipped with equipment for overcoming water obstacles along the bottom at a depth of up to 4 meters. The disadvantage of the "tiger" was the relatively low speed and power reserve.

In August 1944, the production of T-VIH ended. A total of 1354 cars were made. During the production process, the commander's cupola was unified with the one on the Panther, rollers with internal shock absorption, and a new engine were used. A commander's version was also produced - with an additional radio station and ammunition reduced to 66 rounds.

Before participating in the "Citadel", the "tigers" had been in battle several times: on January 8, 1943, a company of 9 vehicles was sent on an offensive on the Kuberla River in an attempt to release the 6th Army encircled in Stalingrad; in February of the same year, the British met 30 "tigers" in Tunisia; in March, three companies were in the battle near Izyum.

The idea to support the infantry with mobile artillery was realized in 1940 with the creation of the StuG75 assault guns. They were produced on the basis of the T-III and T-IV and, in essence, were fully armored 19.6-ton turretless tanks with a short-barreled 75-mm cannon mounted in the wheelhouse, as on the T-IV of early modifications. However, they soon had to be re-equipped with long-barreled guns of the same caliber to fight enemy tanks. Although the new guns retained their name and affiliation with artillery, they were increasingly used as anti-tank guns. As the modernization increased armor protection, cars became heavier.

Since October 1942, 105-mm StuH42 assault guns with a combat weight of 24 tons, arranged as StuG75, were produced on the same base. The rest of the characteristics were about the same. StuH42 participated in the Battle of Kursk. On the basis

of the T-IV, they launched the production of Brumber assault tanks. 44 of these vehicles as part of the 216th assault tank battalion went into battle in a "fiery arc".

The first special open-type anti-tank self-propelled guns were

"Marder-II" and "Marder-III". They were made from the spring of 1942 on the basis of the T-II and captured Czech tanks and equipped with 75-mm or 76.2-mm captured Soviet guns, which were mounted in a thin-armored cabin open from above and from the stern and therefore resembled our SU-76.

Since February 1943, on the basis of the T-II, they produced a 105-mm howitzer self-propelled gun "Vespe".

In 1940-1941, for assault guns, the Alkett company developed a chassis on a somewhat elongated T-IV base (chassis, drive wheel, idler) using a transmission, final drives and T-III tracks. It was decided to install an 88-mm anti-tank gun, as on the Elefant, or a 150-mm howitzer with a 30-caliber barrel. The engine in a block with a gearbox was moved forward, the fighting compartment was shifted to the stern. The servants of the guns in front, from the sides and partially behind were protected by 10-mm armored shields. The driver was located in the armored cabin on the left in front.

The 88-mm self-propelled gun "Nashorn" ("rhinoceros") entered the troops from February 1943; until the end of the war, 494 units were produced. For anti-tank combat, her armor was insufficient, besides, the car was unnecessarily high. On the southern face of the Kursk salient, 46 Nashorns fought as part of the 655th heavy division of tank destroyers. The 150-mm self-propelled gun "Hummel" ("bumblebee") was produced in 1943-1944. A total of 714 cars were produced. Her high-explosive projectile weighing 43.5 kilograms hit targets at a distance of up to 13,300 meters. Self-propelled guns were listed in the artillery regiments of tank divisions, 6 in a heavy battery of self-propelled howitzers.

In addition to them, the Wehrmacht was armed with 12-ton infantry guns of 150 mm caliber based on 38 (t). In the spring of 1943, 100 vehicles were built on the basis of the T-III, in which the cannon was replaced with a flamethrower that threw out a combustible mixture at a distance of up to 60 meters. 41 of them operated on the southern flank of the Kursk salient.

At the beginning of World War II, the Zündapp company produced a tracked vehicle, which was called the "light cargo transporter". Of course, she had nothing to do with this name. It was a tankette about 60 centimeters high. Despite the absence of a driver, the car maneuvered across a pitted field, went around funnels, and overcame trenches. The secret turned out to be simple: there was still a driver, but he controlled the car from a distance, being in a carefully camouflaged trench. And his commands were transmitted to the tankette by wire. The machine was intended to undermine the pillboxes and other fortifications of the Maginot Line and was completely filled with explosives. Our soldiers encountered an improved version of the "land torpedo" during the fighting on the Kursk Bulge. Then she was called "Goliath" in honor of the biblical hero, who was distinguished by great physical strength. However, the mechanical "goliath" turned out to be just as vulnerable as the legendary hero. A blow with a knife or a sapper shovel on a wire, and a slow-moving car became the prey of a daredevil. In a free moment, our soldiers sometimes sat astride a captured "wonder weapon" as if on a sled and rolled on it, holding the control panel in their hands.

In 1944, a “special machine 304” appeared, this time controlled by radio, with another encrypted name “Springer” (“Chess Horse”). This “horse” carried 330 kilograms of explosives and was supposed to be used, like the Goliath, to undermine Soviet minefields. However, the Nazis did not have time to launch mass production of these machines - the war came to an end.

In 1939, the first prototype of a four-axle truck rolled into the water, and in 1942, the first Turtle amphibious armored car swam. But their numbers were not significant. But the imagination of the designers continued to seethe.

When the war was already drawing to a close, another car entered the secret tests. A 14-meter cigar-shaped body towered on its relatively short tracks. It turns out that it was a hybrid of a tank and an ultra-small submarine. It was intended for

transfer of saboteurs. They called it "Zeeteufel", that is, "Monkfish".

The car was supposed to slide into the sea under its own power, dive, secretly get close to the coast of the enemy, get out in a convenient place on land and land the spy. Estimated speed - 8 kilometers per hour on land and 10 knots in the water. Like many German tanks, the Monkfish turned out to be inactive. The pressure on the ground was so great that the machine became helpless on soft, silty soil. This "amphibian" creation fully reflected the absurdity of both the technical idea itself and the sabotage method of fighting "from around the corner", which the Nazis decided to resort to at the end of the war.

The project of a super-tank created by Porsche during the implementation of the most secret “Project 201” turned out to be no better. When a bulky monster was rolled out to the Kummersdorf training ground near Berlin ... in a wooden version, Porsche, apparently realizing that the factories, overloaded with the implementation of current programs, would not accept this elephantine-shaped block for serial production, named for the purpose of conspiracy "Maus" ("Mouse"), made a "knight's move" - he invited Hitler to the training ground, with whom he was in close relations. The Fuhrer was delighted with the new idea of the "father of German

tanks." Now everyone was unanimously in favor, and only in June 1944, two prototypes were built: Maus-A and Maus-B, weighing 188 and 189 tons, respectively. The frontal armor of the giants reached 350 millimeters, and the maximum speed did not exceed 20 kilometers per hour.

It was not possible to organize mass production of "super mice". The war was coming to an end, the Reich was bursting at the seams. Ridiculous miracle tanks were not even delivered to the front line, they were so huge and heavy. Even the "honorable mission" entrusted to them - to guard the Reich Chancellery in Berlin and the headquarters of the ground forces near Zossen - they did not fulfill.

In the footsteps of "Katyusha"

> “In 1942, Russian newspapers published the first photographs of strange German weapons captured on the Russian front,” writes the well-known historian of science and technology, Willie Ley. - It had six short barrels about 1.5 meters long, which were mounted on a light modified carriage of a 37 mm anti-tank gun and resembled the drum of an old Colt revolver.

This somewhat strange system was a new German rocket weapon. Officially, it was called "Nebelwerfer-41", that is, "gas thrower", or smoke device of the 1941 model. The name indicated that this weapon was originally intended to be used as a chemical mortar to create smoke screens. However, reports from the front indicated that this weapon was used as a mortar for firing high-explosive fragmentation mines. Later, chemical projectiles for this weapon were also captured, confirming its original purpose. The total length of the projectile slightly exceeded 100 centimeters, and its total weight was 36 kilograms. The powder charge

was located in the head part and consisted of seven checkers of smokeless powder, each 400 millimeters long and 40 millimeters in diameter with a hole in the center with a diameter of 6.35 millimeters. The powder charge weighed about 6 kilograms. The projectile had a caliber of 15 centimeters. The launch time from all six barrels was, according to reports from the front, an average of 6 seconds. The maximum firing

range exceeded 5000 meters. The accuracy of fire was good, but, of course, inferior to the accuracy of fire of artillery pieces of the same caliber.

At first, this development was regarded as an attempt by the Germans to somehow neutralize our famous Katyushas, and an unsuccessful attempt. The main drawback of the "Nebelwerfer" was that he greatly unmasked himself when fired; the flame of the rocket powder charge, escaping through the open breech of the launch tubes, reached 12 meters in length and was extremely bright. The active part of the trajectory of the rocket was 140 meters, and even in the daytime, when the light from the torch of the rocket engine was not so noticeable, when it was launched

a large cloud of dust was rising, unmasking the firing position.

Maybe that's why, about a year after the appearance of the Nebelwerfer, a larger 21-centimeter caliber rocket mortar of a slightly modified design was created. In the projectile of this mortar, a rocket powder charge was placed in the tail section. Instead of tubular checkers, the projectile had one large powder charge weighing 6.6 kilograms, 413 millimeters long and almost 130 millimeters in diameter. On the peripheral part of the charge there were eight grooves and eight longitudinal channels in a circle, as well as one central axial channel. The firing range of this option was already about 6 kilometers.

By this time, a fundamentally new reactive system was created, called the Schweres Wurfgeret (heavy throwing device). This weapon used a jet engine 21-SL1 projectile in combination with a 32-cm warhead filled with a mixture of oil and gasoline (about 42 liters). The whole projectile was similar to the battle club of the ancient heroes and weighed more than 90 kilograms. "Wurfgeret" began to enter the troops in separate shells,

in a special package that served as a launcher. This packing frame was tilted and the Wurfgeret was ready to launch. A heavy incendiary "bomb", propelled by its own engine, could fly over a distance of more than 1800 meters.

Later, several of these 32 cm shells were found, marked with yellow crosses in the head; the Germans designated mustard gas with this sign. But when the found shells were opened by chemical service specialists, they also contained a mixture of oil and gasoline. The launch of rocket

projectiles from packaging frames was only satisfactory in terms of accuracy at test sites; on the battlefield, such shells turned out to be ineffective. Then the Germans put together six frames in two rows (three in each row) and installed them on a gun carriage, hoping in this way to improve the accuracy of fire and ensure its greater massing. Around the same time, a smaller version of the Wurfgeret was created with a warhead with a diameter of 28 centimeters, stuffed with high explosive. As already mentioned, all these designs can be regarded as attempts to create something similar to our

Guards jet mortar. But the Germans were able to capitalize even on their failures. Here is a story about this, for example, told by engineer Alexander Shirokorad. Developing their designs, it is quite possible that the Germans also remembered the designs of our talented inventor L.V. Kurchevsky,

who was engaged in dynamo-reactive or recoilless guns before the war. In them, unlike traditional guns, when fired, the recoil is balanced by a jet of powder gases that fly out through the breech breech. The simplest recoilless option is a smooth-walled pipe carried by one fighter. He fires from the shoulder or from openers, or from a simple tripod. At the same time, the pressure of gases in the barrel does not exceed 10–20 kilograms per square centimeter, the initial velocity of the projectile is 25–100 meters per second, and the effective firing range is 30–100 meters.

In addition, the range of dynamo-reactive guns is increased by installing all kinds of nozzles in the “breech”, for example, a Laval nozzle. With an appropriate selection of parameters, the gas pressure can become the same as in the barrel of a conventional gun, but then the DRP will have to be made stronger, and therefore heavier, which is undesirable. Therefore, charging chambers of large diameter and volume are used, which allows, with a relatively low pressure in the bore (600–800 kilograms per centimeter), to inform the projectile of an initial velocity of 400–500 meters per second or more.

And the very first recoilless guns appeared back in 1915, when the aforementioned colonel of the Russian army Gelwig made a 76.2-mm air gun, in which the barrel served as an inert body - after a shot it was lowered by parachute. In the autumn of 1916, a 70-millimeter open-tube dynamo-reactive gun designed by M. D. Ryabushinsky was tested near Petrograd, and in the 1920s in the USSR they experimented with dozens of such artillery systems with a caliber from 37 to 107 millimeters, muzzle - and

breech-loading, smooth-bore and rifled, with deep groove for shells with ready-made ledges, unitary and cap loading. In 1925 alone, seven different recoilless rifles were tested, and five more the following year. Kurchevsky went even further. He inserted a

nozzle into the breech of conventional 76.2 mm field and mountain guns and received recoilless. The barrel and ammunition remained standard. In 1932-1933, Kurchevsky managed to enlist the support of the people's

commissar of heavy industry G.K. Ordzhonikidze, his deputy I.P. Pavlunovsky, the head of the Main Artillery Directorate G.I. Kulik and monopolize everything related to recoilless. And even more: remember the words of the then popular march - "we were born to make a fairy tale come true"? Please get a tiny G-5 type torpedo boat with a 152mm DRP (and this is a cruiser caliber!); the destroyer "Engels" is firing from a 305-mm DRP (battleship caliber on a ship with a displacement of 1400 tons!). They put a 305-mm howitzer on a car, a 76-mm cannon on a motorcycle. And Kurchevsky proposes a project for a 500-mm recoilless rifle for a light cruiser ...

The Deputy People's Commissar of Defense for Armaments M. N. Tukhachevsky was also carried away by the novelty. “As I understand it, so far no one has objected to his idea of transferring all artillery to the dynamo-reactive principle, but they even agreed,” recalled designer V. G. Grabin. The

pressure was powerful, it was experienced by both the military and production workers. The latter, for example, received telegrams from Ordzhonikidze of this kind: “If Plant No. 7 does not master the production of Kurchevsky guns, then the director will be removed from work!”

Kurchevsky was an enthusiastic, assertive and risky person, and therefore burned repeatedly with his undertakings. The first time he was accused of sabotage was back in 1923, when he allegedly squandered government money, but did not build the promised helicopter. The inventor was sent to Solovki and was remembered only in 1929, when the Red Army needed new weapons.

Moreover, it suddenly turned out that even in the conditions of the camp, Kurchevsky managed to design a new recoilless gun! He was again caressed, conditions were created for him to work, and Kurchevsky turned around so that about 5000 guns of his design were soon produced by the industry.

But when they got into the troops, it suddenly turned out that only a few were suitable, and then only for training purposes. It's not even just a bad choice of trunk. For example, the Red Army soldiers could roll a battalion 76-mm DRP around the training ground manually, and when towing at a speed of 5–10 kilometers per hour, breakdowns began. Motorcycles and cars, on which Kurchevsky mounted guns with a caliber of 76-305 millimeters, could only move on asphalt. Aviation, tank and ship DRPs were conceived as automatic. However, caps made of nitro-fabric for gunpowder were constantly torn, burned out incompletely when fired and clogged the bore, the complex feed mechanism constantly broke, and double loading occurred, which led to the rupture of the barrels. These were fatal flaws in the design.

And the inventor was once again accused of wrecking. He disappeared in 1937 and was posthumously rehabilitated in 1956. But they say even earlier, in 1942, when it became known about the appearance of recoilless guns abroad, Stalin spoke with annoyance about this: “Together with the dirty water, they threw out the child ...”

And there was reason to lament: active rocket projectiles, which first found use in Kurchevsky's cannons, were then widely used both in the famous German faustpatrons and American bazookas. And we again had to catch up with foreign designers, designing the post-war RPG-2.

In the sky we flew alone ...

Among the three types of armed forces in terms of the development of experimental weapons systems, the Nazi Luftwaffe was in the first place. According to historians in KB

The work of the Third Reich did not stop almost until the spring of 1945. The best minds in Germany were thinking about how to provide Hitler's aces with air superiority. And contrary to the opinion that spread after the war that, say, it was worth appearing in the air, say, our formidable Pokryshkin, so none of the Germans even dared to utter a word, in fact everything was much more complicated ... For a long time, the

achievements of the Luftwaffe pilots in the Soviet press tried remember less. There were reasons for that. The personal accounts of our illustrious aces, in comparison with similar achievements of the pilots of the Third Reich, are very pale.

Three times Heroes of the Soviet Union, fighter pilots A. I. Pokryshkin and I. N. Kozhedub shot down 59 and 62 enemy aircraft, respectively. But the German ace E. Hartman shot down 352 aircraft during the war years! And he was not alone. In addition to him, the Luftwaffe had such masters of air combat as G. Barkhorn (301 downed aircraft), G. Rall (275), O. Kittel (267) ... In total, 104 pilots of the German Air Force had more than a hundred downed aircraft each, and The top 10 shot down a total of 2588 enemy aircraft!

But why did such a gloomy arithmetic come about? Let's try to figure it out. The

same Erich Hartmann arrived on the Eastern Front in October 1942. He flew on the Messerschmitt-109, on the third sortie he was shot down over the Caucasus and taken prisoner. But when he was being taken in the back of a ZIS-5 for interrogation, he knocked out his escort and fled. Taking advantage of his good knowledge of the Russian language, he safely got to his own, and it is strange that they did not drag him to either the special officers or the political department. For some reason, even the cruel Gestapo was not particularly interested in them. They just gave Hartman a new car and said: “Fly! ..”

In November 1942, he shot down an IL-2 attack aircraft, but he himself was wounded. He was in the hospital, he began to fly again. Mineralnye Vody, Armavir, Rostov, Nikolaev, Taman… are the first addresses of his

Russian airfields. So, not very successfully, the most productive ace of the Second World War began his flying career. But he was already well prepared, he graduated from the school of military pilots, then - the school of fighter pilots, after which he mastered new equipment, on which he was

supposed to fight. Such unhurriedness seems rather strange to us: the world war was already in full swing, the battle for England was underway, German aviation was suffering losses over North Africa, over Crete and Malta, the front required pilots ... But unlike our short-term schools, when two -three months and 10-12 hours of flight, the Germans were in no hurry. An airplane is an expensive car. It is better to learn a pilot right away than to rely on luck, on the fact that he will learn himself. Unless, of course, he is lucky and he is not shot down in the first battle.

In the Luftwaffe, their pilots were thoroughly prepared for the first battle. Each had to independently fly 450 hours (at the end of the war 150, we already took them by the throat and had to change the teaching methods). And in no case was a novice supposed to engage in battle ahead of time. Usually, during the first 100 (!) sorties, he was only supposed to observe the battle from the side, study the tactics, habits of the enemy and, if possible, evade the battle. And this technique brought good

results. By the middle of 1943, Erich Hartmann shot down 34 aircraft, and on July 7 - in just one day, as indicated in his flight book - he took off three times from the Ugrim field airfield at 3.05, at 5.45 and at 17.07, he won seven air battles, destroying three IL-2 attack aircraft and four LAGG-5 fighters. Major Hartmann won his last, 352nd, air victory on May 8, 1945. Habitually cut off the newest

Yak-11, made a U-turn and went to land. He was awarded the highest military awards in Germany: on October 29, 1943 - the Knight's Cross, on March 2, 1944 -

the Knight's Cross with Oak Leaves, on July 4, 1944 - the Knight's Cross with Oak Leaves and Swords, and a month later, on August 25 - Knight's Cross with oak leaves, swords and diamonds. There was no higher reward in the Third Reich. He was received several times at his headquarters by Hitler, and Erich was sewn a white dress uniform for these receptions.

But even after that, he continued to fly (and shoot down), like many ordinary pilots - no one sent two squadrons to protect him, as happened with some of our heroes ... And he retired with the rank of colonel, never having received general stars. And he doesn't seem to regret it at all. In any case, he lived the rest of his life quietly in a small German town,

and when he died a few years ago (already after the unification of Germany), according to his will, he was buried as a private person - in civilian clothes, without an honor guard and salute.

Only once did he allow himself to reminisce about the past. Here is what General Ignarov told the writer Yevgeny Dobrovolsky. When, immediately after the war, having met face to face with the captured Hartman, he was about to take the German by the chest, hissed: “I’m thee, bitch giblets, now I’ll sew with my own hand, like a war criminal! How many souls have you ruined! - the one, frail, of medium height, fair-haired, answered rather calmly, only turned a little pale: “You will not frighten me, Mr. General, I have looked death in the face 350 times!”

* * *

“There was an intertwining of two approaches in our and German Air Forces - rationalism and window dressing,” notes Dobrovolsky. - And yet - the different price of life on the scales of history. The Germans took care of their soldier. Ours about such categories - a lone soldier - did not really care. And quite recently, a monument was erected to another commander, whose only skill was ruthlessness to his soldiers, plugging holes in the front with “cannon fodder”.

We built planes, rescued the Chelyuskins, delivered the Papanins, we had Chkalov, the great pilot of his era, who flew across the North Pole to America. “We are not beggars, we have thousands of them!” It's about planes. They showed a movie like this - “If tomorrow there is war!” And when it struck, it turned out that all those thousands were no good. I-15, I-16, I-153 ... Why were they only baked in such quantities? And our newest, most secret Yaks, LAGGs, MIGs burned down at the front-line airfields on the very first day. And on that first day it turned

out that our pilots do not know how to fight. And not because they studied poorly, but because they were taught the wrong thing - they crammed the history of the party, worked out the leader’s speeches, brought up loyalty to the motherland, but how to go behind the enemy, they showed more and more on the fingers, and not in the air ... They thought the number it will turn into quality, we will crush mass character, we will shower it with hats.

And here is the result: at the beginning of the war, the command of the German Air Force awarded the Grand Cross to pilots who shot down 25 enemy vehicles, by November 1941, in the midst of the battle for Moscow, the bar was raised to 40, and by 1944 - to 100. They raised it too quickly his account some German

pilots. In his memoirs, Gerd Barkhorn, the commander of the 2nd fighter squadron, where Hartmann served, wrote: “At the beginning of the war, Russian pilots were imprudent in the air, acted stiffly, and I easily shot them down with unexpected attacks. But still, it must be admitted that they were much better than the pilots of other European countries with whom we had to fight. During the war, Russian pilots became more and more skilled air fighters. Once in 1943, I had to fight on the Me-109G with one Soviet pilot on the LAGG-Z. The side of his car was painted red, which meant a pilot from the Guards Regiment. Our fight lasted about 40 minutes and I couldn't beat him. We did everything on our planes that we knew and could. However, they were forced to disperse. Yes, it was a real master!”

And this despite the fact that our pilots did not like LAGG and called it “Flying Aviation Guaranteed Coffin”. It must be said that all the parameters of our mass-produced aircraft were lower than those of the Germans, and this inequality, contrary to generally accepted opinion, persisted until the end of the war, when, under the bombing of the Allied aviation, they managed to release about two thousand jet fighters, the speed of which reached 900 kilometers per hour. hour!

So all our talk about the fact that Hitler's aces have such large personal accounts

were only because they made notes on the number of engines - they shot down a four-engine aircraft, so they immediately counted it as four - this, excuse me, from the evil one. More often, ours recorded a plane shot down in a common heap, on the personal account of the eminent one - you see, he will become a Hero. By the way, to get the title of Hero of the Soviet Union, as far as I know, it was enough to shoot down 25 enemy vehicles of any class.

Let's try to figure out why the army of the victors had three times more losses,
than the vanquished. And in aviation, the gap is even more significant ...

It all started off pretty well for us. In the skies of Spain, volunteer pilots of our Air Force, despite the fact that the famous "donkeys" - I-16 fighters - were inferior to German aircraft in speed, gave the Nazis a good light. The Germans themselves did not hesitate to recognize the advantages of our pilots in flight skills. Here is just one piece of evidence.

In the spring of 1940, B.P. Suprun, our famous ace, at that time the Hero of the Soviet Union, visited Germany as part of a delegation of Soviet specialists (he received the second Star posthumously already during the fighting during the Great Patriotic War). The Germans showed us their Me-109 fighter. Our specialists rated the car rather reservedly. Then the somewhat annoyed designer E. Henkel suggested that Suprun try out the latest Xe-100 fighter. Here is what he himself wrote about this in his memoirs:

> “The Russian mission included a young pilot, Hero of the Soviet Union, whose flying skills made a great impression. It was a tall, stately man. Before the first flight of the Xe-100, the fastest he had ever flown, he had a ten-minute consultation with one of my best test pilots. Then he lifted the car into the air and began to throw it across the sky, performing such figures that my pilots were almost dumb with surprise.

But what can I say, if the commander of the Luftwaffe Hermann Goering himself, as already mentioned, passed flying universities on the territory of our country, under the guidance of Soviet instructors! .. And suddenly everything changed

so dramatically with the start of World War II. First
For months, the German aces had an undeniable advantage in the air. Why did it happen?

There are several reasons for this, in my opinion. Firstly, almost all aviation was concentrated on front-line airfields, where it was destroyed in the first days, or even hours after the start of hostilities.

However, the well-known historian Roy Medvedev believes that such a concentration turned out to be a necessary measure due to the fact that our Air Force began to receive new equipment for which the old runways were not suitable. They began to urgently modernize them (and at many airfields at once), as a result of which a huge amount of equipment was concentrated on the remaining (mostly civilian) airfields ...

Perhaps this is so. Nevertheless, in any case, bungling is evident. You can’t hide anywhere from the fact that by June 1941, 70-80 percent of the USSR aircraft were inferior in terms of their flight performance to the German machines of the same type. And those few pilots who still managed to take off and fought with superior enemy forces often had to use only the “secret Russian weapon” - a ram.

However, this weapon is of the same type as the infantryman's attempt to close the embrasure of an enemy pillbox with his own chest. A ram, as a rule, simultaneously led to the loss of one's own car, despite all the instructions, and even to the death of the pilot. It is no coincidence that our pilots resorted to this last resort for the most part only at the beginning of the war, when the enemy had overwhelming air superiority. If in the first year of the war 192 rams were made, then in the last year - only 22 ... Over time, our designers and production workers managed to turn the tide.

The front began to receive more and more new, more advanced equipment, and by the end of the war, not the German, but the Soviet Air Force had an overwhelming advantage in the air. However, one should not think that we no longer had something to learn from the German

specialists.

Usually, when it comes to this type of aircraft, they immediately recall the famous "pawn" - the Pe-2 aircraft designed by V. M. Petlyakov. However, let's not forget that the "Petlyakovs" appeared at the front later than the famous "lappets" - dive bombers Yu-87. Moreover, engineer Iosif Goldfain unearthed an interesting

story about this
about...

Shortly before the Great Patriotic War, L.P. Beria called the aircraft designer A.N. Tupolev and ordered to urgently make a "high-altitude, long-range, four-engine, dive bomber." Here is how Deputy General L. L. Kerber spoke about this: “Tupolev returned angry, like a thousand devils ... Beria's idea was clearly untenable. A lot of arguments "against" and not a single "for". Unless the Germans and Americans have single-engine dive bombers, we should surpass them and create another not even the Tsar Bell, but the Tsar Dive. According to Tupolev, "making such an aircraft was pure madness." Indeed, when diving, the machine experiences huge overloads, which means that its design

must be especially strong, which is impossible to achieve with a four-engine aircraft. A high-altitude bomber must certainly have a pressurized cockpit for the crew, equipped with a remote control of weapons, but it was not produced in the USSR, such a control. There were other equally strong arguments against the creation of this aircraft, but Beria stubbornly insisted on his own. Tupolev pulled as hard as he could, referring to the workload on the Tu-2, and then the war broke out ... Of course, what happened could first of all be explained by the technical illiteracy of the NKVD chief, if not for one circumstance - then the Germans were

working on a project of such a dive bomber!

It turns out that back in the summer of 1935, German aircraft designers were ordered to create a heavy bomber with a range of 2,500 kilometers, capable of bombing and diving. In the summer of 1937, the Heinkel company began work on the Xe-177, equipped with an original power plant - four motors placed in pairs rotated two propellers.

In November 1939, the aircraft made its first flight, and then a losing streak began: five prototypes of the new aircraft crashed, two of them during a dive, 17 test pilots died.

In the end, the Xe-177 was removed from the aerodynamic brakes and turned into a conventional bomber, which was mass-produced from March 1942. In total, the Luftwaffe received 545 bombers of several modifications (other figures are given in the literature). The Xe-177 A5 was considered the most successful, manufactured since February 1943 as a torpedo bomber and carrier of two air-to-ship missiles.

Firm "Heinkel" offered three years earlier and a variant with four motors installed in the wing one by one, and with a pressurized cabin; however, only a few experimental Xe-274 and Xe-277 with conventional cabins managed to be made before the end of the war. We

do not have detailed information about the combat use of Xe-177. But the fact that a lot (according to some sources, up to half) of them were lost due to accidents speaks for itself. Why did Hitler

need such a monster? The absence of strategic bombers in the Luftwaffe is usually explained by the shortsightedness of the leaders of the Third Reich. However, this obscures the essence of the matter, because German designers worked on similar equipment, only to no avail. It is known that the accuracy of bombing during a dive is much higher than from level flight. Therefore, the leaders of Nazi Germany could be tempted to use a small number of Xe-177 dives to effectively hit strategic targets deep behind enemy lines. Since there were no objective reasons to replenish the Soviet Air Force with a similar combat aircraft, it remains to assume a subjective one. Pay attention to a strange

coincidence - in 1939 the first Xe-177 flew, and after some time Beria gives

instructions to Tupolev to create the same. If we assume that the agents of his department managed to get top secret information about the German super dive bomber, then the seemingly incomprehensible stubbornness of Beria becomes quite understandable ...

flying tanks

> “I once heard that somewhere in 1942, when the Nazi command realized that the blitzkrieg had finally failed, an attempt was made to assassinate I.V. Stalin in order to physically eliminate him. For this, a special sabotage group was formed, which included not only specially trained and well-trained agents. In addition, the equipment of this group included unique special equipment that existed in a few copies, including a flying tank capable of landing almost on a swamp, and pocket grenade launchers.
>
> I would like to know more about this unique operation. Why did she fail? Yours sincerely, S.
> M. Samusenkov, Tver Region.”

This letter served as the starting impetus for the work on this topic. Pretty soon it was possible to find out that a quarter of a century ago, the magazine "Change" really wrote about such an operation. In 1943, in the 6th department

of the imperial security directorate, they planned an attempt on the life of the Supreme Commander-in-Chief I.V. Stalin. The calculation was simple: the death of this man would inevitably have a negative impact on the actions of the Red Army, and even cause panic in the troops. The highly classified Operation Zeppelin was prepared with traditional

German thoroughness. In one intelligence school, they found a suitable candidate for the execution of this action. It was a certain Politov, who in May 1942, being captured, did not hide either his position - he served as a company commander - or his knowledge of the secrets of the Red Army. In exchange for his talkativeness, he hoped to get the position of burgomaster. But he was sent to intelligence school to study as a secret agent. Here they also picked up a friend of life by the name of Shilova, and by position - a radio operator-cipher clerk. A group of engineers made special equipment, which included, in particular, the "panzerknakke" - a short-barreled recoilless rifle with a caliber of 60 millimeters, whose cumulative projectiles were able to penetrate even 45-

mm armor. It was fastened with "panzerknakke" straps on the right arm and was equipped with a push-button trigger.

It was assumed that an agent equipped with all the necessary documents would make his way to Moscow, track down how he would make his next exit from the Kremlin to Stalin's dacha, and smash it to smithereens, along with everyone who was inside. A Soviet-made M-72 motorcycle was prepared to

deliver the terrorist and his companion to Moscow. He, along with the “Tavrin spouses” - as they were listed according to the documents - was supposed to be delivered to the Moscow region by a specially converted Arado-232 aircraft equipped with a 20-wheel landing gear for takeoff and landing on unprepared

sites.

In order for all sorts of patrols to cling to smaller saboteurs, Tavrina-Politov decided to pass off as a front-line hero, awarded the title of Hero of the Soviet Union, awarded five orders and two medals. For greater reliability, even fake issues of Pravda and Izvestia were prepared, where, among others, the list of awardees included first the captain, and then Major Tavrin. They also made him a certificate of an employee of the front-line counterintelligence "Smersh" ...

In a word, everything seems to have been foreseen. However, the operation still failed. Why? At first,

the underground workers from the occupied Riga gave an alarm signal. Say, a strange order was received in the studio. It was necessary to urgently sew a leather coat in the Russian style, but with wide sleeves and large inside pockets.

Then a strange plane appeared at the airfield near Riga. It became obvious that something was being prepared… But what exactly? The underground workers did not succeed in finding out this to the end - one night the plane took off and headed for Moscow.

However, the information received turned out to be enough to intensify air patrols of the approaches to the capital, to put anti-aircraft batteries on high alert. Arado ran into one of these batteries ... I had to land on an emergency ... The pilots helped to roll out the plane

and went home - towards the front. And the terrorists rolled towards Moscow. And soon they caught the eye of the patrol, whose senior was surprised at such a discrepancy: judging by the documents, the motorcycle must travel about two hundred kilometers in pouring rain, and its passengers are almost dry ...

This is how the story came out.

* * *

As for the "flying tank", which is mentioned in the letter, then, as you can see, "Arado" could be called such with some stretch. But that doesn't mean that they didn't exist. They say that the well-known sabotage ace Otto Skorzeny was very interested in such machines. News of such machines could reach him from ... Russia.

Here is what the Hero of the Soviet Union, laureate of the State (former Stalin) Prize, Honored Test Pilot of the USSR S. N. Anokhin said about the “flying tank”. It was he who in the summer of 1942 had a chance to lift this unique machine into the air.

The essence of the matter is this. Some of our officials came up with the idea of equipping at least some partisan detachments and sabotage groups with armored vehicles. But how will she get behind the front line? They suggested that our well-known aircraft designer O.K. Antonov think about it. And in a few evenings he created an amazing design - wings and tail plumage were added to a light tank ... It turned out a kind of glider, which Anokhin was instructed to test in flight.

When the air tank hybrid was brought to one of the airfields near Moscow, it caused a lot of controversy. Skeptics believed that such a "cuttlefish", of course, would fall apart for another earth...

“But we believed the calculations,” recalls Sergei Nikolayevich. - And it turned out, that such a structure could well rise into the air.

The final judgment, of course, could only be made after flight testing. The pilot reacted to the very process of preparing the first flight without much unrest. He approached, climbed through the top hatch, sat and looked around. Yes, it was not very convenient to look at the world around us through a narrow viewing slot, although the designer provided for a special optical device for a better view. To the usual tank equipment, a control stick, pedals for controlling the rudders were also added. On the dashboard are a compass, speed indicator, altimeter ...

“In general, everything was tolerable,” Anokhin recalled. - Although it was somehow awkward sit with a parachute in a tank helmet ... "

Tests of the aircraft tank began with runs on the ground. The pilot taxied the tank onto a concrete strip, stood in the wake of the towing aircraft. The rope was hooked. Start, run... Sparks flew from under the tracks, it seemed the tank was about to come off the ground. But the tank pilot opened the cable lock, and one tug went into flight. And the tank still ran by inertia for some time, and then left under its own power to the parking lot. At a distance, the engineers were worried. For the bomber, they were calm. But they were tormented by doubts about the strength of the tracks. But everything worked out - the tracks withstood the increased load.

A few days later, "go-ahead" for flights was issued. We decided to start early in the morning.

The flight task is a flight in a circle, the height is 1500 meters. On the second lap - uncoupling, planning.

And here is the aircraft tank at the start. Rope hooked. Bomber Commander Pavel Eremeev gave the plane a little forward, chose the slack in the cable.

The starter waved a flag - let's go! The rumble of tracks on concrete. Sparks! And suddenly - silence ... The glider took off from the ground. Five

minutes of flight is the norm. Passed the first round. Nine minutes - the norm, the second turn ... And then

Yeremeev's voice in the headphones:

"That's it, Seryozha, I go to the nearest airfield and unhook it. The engines are boiling!.." The aircraft tank turned out to be heavy for towing.

> "The height at that moment was three hundred or four hundred meters," Anokhin recalled. - He grabbed me. I'm flying myself. I planned for about two or three minutes, went in for a landing, sat down normally.

With its appearance, the air tank caused considerable confusion on the airfield of a foreign airfield, after all, the second summer of the war was going on. And then it is not known where a combat vehicle appears from, and even without any identification marks ...

But the pilot got out of the cockpit, and everything was safely explained. The world's first flight tank aircraft was successfully completed.

Despite the uniqueness of the experiment, a careful study of the problem reveals that the design of the "flying tank" was created not only by Antonov. So, according to the information of aviation engineer Konstantin Gribovsky, even the battles during the First World War gave rise to many outlandish types of military equipment.

When the first airborne units appeared - maneuverable, capable of quickly covering considerable distances, landing behind enemy lines - they had to be equipped not only with light, but also with heavy weapons, including tanks and artillery pieces. This problem was solved at once in many countries in different ways, but an analysis of the work carried out then showed that specialists went in three main directions ...

The first involved the transfer of tanks on heavy gliders. First, this idea was expressed in our country, in an organization led by the famous pilot and inventor P. Grokhovsky. He proposed in 1932 a suspension for transporting wedges "under the belly" of an airplane. In addition, it could be dropped on a parachute with a dome diameter of 30 meters, which was placed in a separate box. Three years later, the Red Army adopted the universal PG-12 (cargo suspension, 12th) for TB-Z bombers. It was possible to cling to it a light tank T-37A weighing 3.5 tons. In flight, the tankers were in the car, and after landing they instantly released the tank by moving the lever that actuated the quick-release locks.

For the first time this method was openly demonstrated in 1935 during maneuvers in the Kiev Special Military District. This made a strong impression on foreign military attachés ... But the load attached "under the belly" increased the aerodynamic drag of the carrier aircraft and worsened its flight characteristics. Guns, tanks and cars began to be placed in streamlined containers.

* * *

The designers also thought about creating a simple flying tank. For the first time such an idea proposed to implement in the same 1932, the American engineer Christie.

First, he tried to teach a light 5-ton wheeled-tracked tank of his own design to fly. Christie planned to install a biplane box on it, to which a cruciform tail was attached to two tubular beams. On the upper plane, in front, there was a propeller with a gearbox. Note that Christie did not at all rule out a monoplane scheme, but

the biplane provided a lower specific load on the wing, and hence a reduced thrust-to-weight ratio of such an unusual aircraft. The wheels helped him accelerate to 120-135 kilometers per hour. At this speed, the structure could take off.

The crew consisted of two people, and one combined the duties of a driver and a pilot. The fact that the tank aircraft landed on a tracked chassis adapted for cross-country movements allowed it to land directly on the battlefield. To do this, Christie equipped all wheels with independent suspension with a lot of travel in the vertical direction.

When taking off, the car had to accelerate for the first 70–80 meters as usual, on tracks, then the driver would switch the engine to a propeller, and, after running another 90–100 meters, it would take off from the ground. After landing, the pilot, using a special lever, would drop the wing and plumage and turn back into the driver. According to the inventor, a hundred of his tanks, suddenly flying (literally) on the enemy, would defeat him very quickly. Naturally, the question arises - could

the “flying tank” even rise? If we take into account that its glider part weighed 1.5–2 tons, then the load per unit of power was about 9.0 kilograms per horsepower. Not so much - after all, for transport aircraft of the early 1930s, it was about 4-10 kilograms per horsepower. So, Christie's idea was quite real. Another thing is switching the drive from the wheels (caterpillars) to the propeller and vice versa. Unfortunately,

it has not yet been possible to find a description of the transmission in the published materials, and as experience has shown, its creation at the then state of the art was a very difficult task. This, apparently, prevented the air tank from taking off ...

By the way, Christie was working on options for a "flying tank" with a more powerful engine - 1,000 horsepower. He also offered to simply carry tanks on transport aircraft of a special design. Moreover, they should also land directly on the battlefield. This method was developed in the 1950s.

Following Christie, the idea of a "flying tank" was put forward by the Soviet aircraft designer A. Rafaelants. Judging by the few surviving materials, the project was similar to the American one, but it also had a number of differences and

advantages. First, the driven propeller, rather than the puller, was mounted on the rear of the tank, making a special transmission unnecessary. Secondly, the cargo glider was a monoplane scheme on its own chassis, which made it possible to use it for transporting other cargo. In this version, instead of a tank, a cabin was attached to it, in which cargo was placed and there was a place for the pilot. From a constructive point of view, the glider was a large area wing. At the ends of the rectangular center section, shaped chassis racks with a larger track were attached (which means they are stable when moving on the ground), between which a VT-type tank with a crew was placed. A single-keel tail was attached to the wing and chassis trusses with four tubular beams. Own chassis allowed the glider to be used repeatedly. ... So, as you can see, it was by no means the specialists of the Third Reich who

were the founders of this idea. In 1945, the Japanese also built a similar apparatus, albeit smaller in

size, for air delivery of a small tank specially designed for this. The Ku-6 glider had a wing area of 60.3 square meters, the flight weight of the entire complex was 3.5 tons, but it did not rise into the air. With the appearance in the 1950s of heavy military transport aircraft with large cargo cabins and ramps, as well as powerful

parachute systems, the issue of a "winged tank", as they say, was removed from the agenda.

However, the experience gained in the course of work on such structures was not in vain. It was to some extent implemented when creating an aircraft for direct support of infantry - an armored attack aircraft IL-2, nicknamed by the Red Army "flying tank", and by the Nazis - "Black Death". They could not oppose anything to this machine until the end of the war. But they could well recoup on another

invention ...

The history of the rocket plane is part of the history of rocket development, and the rocket plane itself can be called a by-product of rocket research. Here, for example, what version of the development of this branch of technology is offered by the famous American historian and popularizer of rocket science, Willie Ley. In 1928, the German inventor Max Valle proposed to turn an ordinary aircraft into a rocket one by simply replacing internal combustion engines with rocket ones. He argued that in the future, gradually improving the engines and reducing the area of \u200b\u200bthe bearing surfaces, it would be possible to create a manned space rocket from such an aircraft. Valle's first

experiments were carried out in the summer of 1928; they were an integral part of Opel's experiments to use rocket engines in aircraft. The plane was a glider - then still a new type - "duck". On June 11, 1928, this aircraft took off for the first and last time from the Wasserkuppe in West Germany.

Rocket engines for the experiment were created by Sander, the aircraft was provided by the Rhön-Rossiten Gesellschaft society, and Opel financed the whole thing. Before testing a full-size airframe, small models were tested. The experiments were supervised by A. Lippisch, and the duties of the pilot of this first rocket glider were performed by Friedrich Stahmer. Sander developed five types of missiles for testing, three for model airframes and two for a full-size airframe.

Naturally, the first tests were carried out on models. These were the so-called "tailless" with a wingspan of just over 210 centimeters and weighing about 13 kilograms. One of the powerful rockets with a thrust of 75 kilograms was installed on the first of them. As expected, the wings and ailerons of the model turned out to be just a hindrance for such a powerful rocket; the rocket instantly lifted the model vertically upwards, and when the fuel ran out, the model fell to the ground. In the third

experiment, a model equipped with a small solid rocket was launched from a wooden launch rail using an automatically ejected rubber cable. The model turned out to be quite stable in the air and made a long flight. The fourth trial was similar in many ways to the first. The model with a very powerful rocket mounted on it left the guide, in the words of Lippisch, “like a projectile”, and rose to a height of about 100 meters. It was now quite clear that one rocket would reach ten times as high; the wings, meeting with huge air resistance, sharply reduced efficiency. Having reached the maximum height, the model rolled over on its back, flew like this for a few more seconds, and then, having completed a flip over the wing, took a normal position and planned for a long time.

In the fifth test, the wings of the model failed. They were not designed for the overloads that occur when accelerating to a speed of 560 kilometers per hour in less than 3 seconds. The wings broke and the model fell like a stone to the ground when the engine stopped working.

Nevertheless, these experiments made it possible to draw certain conclusions regarding the possibility of installing rockets on a glider. The experimenters abandoned rockets with a thrust of 360 kilograms, and settled on two types of rockets with a thrust of 12 and 15 kilograms, respectively. Since the pilot could make a mistake, the rockets were ignited by an electric fuse, designed to fire the rockets in series. It was the right precaution. To launch the glider from the ground, a conventional rubber cable was used. The pilot was not supposed to turn on the rockets until the glider was airborne and released from the cable. Despite all these preparations, the first two

attempts to lift the glider into the air ended in failure: something happened to the rubber cable, and Stahmer turned on one of the engines even before the glider was in the air. The fuel burned out, but the speed of the glider did not increase. The second time, Stamer managed to take to the air, but when leveling the glider, he discovered some kind of malfunction and landed, flying about 200 meters. The airframe was returned to the launch pad and the second engine was removed. After inspecting the ignition system, two solid-fuel rocket engines with a thrust of 20 kilograms were installed on the airframe. The distance the glider flew this time was about 1.5

kilometers, and the entire flight lasted a little over one minute.

The next flight was supposed to fly over a small mountain. The launch went well, and as the glider was airborne, the first rocket was fired. After 1-2 seconds, it exploded with a roar. Burning pieces of gunpowder instantly set fire to the glider, but the pilot managed to bring down the flames with a sharp maneuver and land the glider. Immediately after landing, the second rocket caught fire, but, fortunately, the second rocket did not explode. The glider was almost destroyed, and therefore the Rhön-Rossiten Gesellschaft society refused to continue the experiments. Its leaders apparently came to the conclusion that rockets were not suitable for this purpose. After that, the Raab-

Katzenstein company in Kassel began to develop a rocket-powered glider. She built a tailless aircraft similar in design to Lippisch's "tailless" but designed for one pilot and possibly even a passenger. For unknown reasons, the first flights ended unsuccessfully, and the company also abandoned the experiments. Only Opel did not give up, which was also somehow connected with this project.

Opel's glider was ready for flight tests on 30 September 1929. To launch, a wooden guide about 21 meters long was used. There was no rubber cable, or any other starting device: the takeoff was carried out only with the help of rockets. The first two tests, carried out in the early morning of September 30, were not successful. The rocket engines did not develop enough thrust to get the airframe off the ground; he made only a few short jumps.

After breakfast, Opel made another attempt, this time successful. The glider took to the air and made a flight lasting about 10 minutes; the maximum speed of the glider was 160 kilometers per hour. But during the landing, the wings caught fire, as a result of which the device was badly damaged and turned out to be completely unsuitable for further use. By some miracle, Opel managed to escape from the glider that collapsed during landing, but that was the end of his experiments.

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The baton, dropped by Opel, was picked up by the Austrian engineer Eigen Senger. He was undoubtedly one of the first designers of such aircraft, who solved problems not blindly, but on a serious scientific basis.

Senger began his career as a rocket scientist with a wide series of rocket engine tests at the laboratories of the University of Vienna. At that time, he worked mainly with one model - a spherical combustion chamber with a diameter of about 50 millimeters. The engine nozzle was unusually long (25 centimeters), and the diameter of the nozzle cut was equal to the diameter of the combustion chamber. The combustion chamber and the part of the nozzle adjacent to it were equipped with a cooling jacket, into which fuel was supplied under high pressure. It performed two functions: it cooled the combustion chamber and compensated for the pressure created in it by the combustion products. As a fuel, Senger used volatile oil

products; injection was carried out by pumps of the type used in diesel engines. Oxygen was fed directly into the combustion chamber under pressure; but instead of liquid oxygen, Zenger used gaseous oxygen supplied directly from a conventional steel cylinder that had pressure reducing valves.

A small rocket motor was suspended from a frame of steel pipes, which could only move in a horizontal direction, compressing a spring measuring device.

traction.

The running time of the Zenger engines was unusually long. A test lasting 15 minutes was quite normal for him. Many engines ran for 20 minutes, and one for half an hour. The engines developed a thrust of about 25 kilograms, while the exhaust velocity was, as a rule, 2000–3500 m/s. Zenger was sure even then - and the further development of rocket technology confirmed the correctness of his views - that the problems of creating larger rocket engines were practically completely solvable.

* * *

The next step of the researchers was the development of technical requirements for the design of the rocket aircraft. Oberth, who worked on this problem at one time, pointed out that a rocket-powered aircraft could have a long range if it took off almost vertically, leveled off at high altitude, and reached maximum speed by using all the fuel in the shortest possible time and thereafter. switch to fast planning. Zenger came to roughly the same conclusions, but he was solving the problem mainly from the point of view of the aircraft designer. He was in favor of a 30° inclined start, but otherwise his method was the same as that of Oberth. Taking the burning time equal to 20 minutes, he calculated that the total flight time of the rocket aircraft would be slightly more than ... one hour, and the average speed - 2500 kilometers per hour.

Zenger was far ahead of his time; he shocked not only German, but also Soviet and American researchers with his project. After the war, his work,

published in 1944 in a very limited edition (100 copies) under the heading "Top Secret", went to General Bolkhovitinov and his employees as a military trophy. They quickly translated the report and were shocked.

The work, entitled "Rocket-powered long-range bomber," analyzed in great detail the technical feasibility of building a large-tonnage manned cruise missile. The authors - E. Zenger and I. Bredt - convincingly showed on the basis of nomograms and graphs that with the proposed liquid rocket engine with a thrust of 100 tons, it is possible to fly at altitudes of 50-300 kilometers with speeds of 20,000-30,000 kilometers per hour and a flight range of 20 000–40,000 kilometers! The physicochemical processes of fuel combustion at high pressures and temperatures, the energy properties of fuels, including emulsions of light metals in hydrocarbons, were studied in detail; a scheme of a closed direct-flow steam power plant is proposed as a system that cools the combustion chamber and drives the turbopump unit.

The problems of the aerodynamics of an aircraft with a speed 10–20 times greater than the speed of sound turned out to be new for our aerodynamicists. Next, the systems of starting devices, the dynamics of takeoff and landing were described. Especially carefully, apparently in order to interest the military, questions of bombing were developed, taking into account the enormous speed of a bomb dropped from such an aircraft before approaching the target. Interestingly,

already then, in the early 1940s, Zenger showed that launching without auxiliary means was unacceptable for a space plane. They were offered to start using a catapult from a horizontal track with the aircraft speed being increased to a value greater than the speed of sound.

Commenting on the calculation and visual flight graphs, Zenger and Bredt wrote: “The takeoff is carried out using a powerful rocket device connected to the ground and operating for about 2 seconds. Having accelerated to a speed of 500 m / s, the aircraft lifts off the ground and, at full engine power, climbs from 50 to 150 kilometers along a trajectory that is initially inclined to the horizon at an angle of 30 °, and then becomes more and more flat ... The duration of the ascent is from 4 to 8 minutes. During this time, as a rule, the

entire fuel supply is consumed ... At the end of the ascending branch of the trajectory, the rocket engine stops, and the aircraft continues its flight thanks to the stored kinetic and potential energy by a kind of planning along a wave-like trajectory with a damped amplitude ...

At a pre-calculated moment, the bombs are dropped from the aircraft. The aircraft, describing a large arc, returns to its airfield or to another landing site, bombs flying in the original direction fall on the target ... This tactic makes the attack completely independent of

the time of day and the weather over
goal and deprives the enemy of any opportunity to counteract the attack ...

A formation of one hundred missile bombers is capable of subjecting, within a few days, to complete destruction of areas reaching the size of world capitals with suburbs, located anywhere on the surface of the globe. The total takeoff weight of the bomber structure was 100 tons, of

which 10 tons was the weight of the bombs, and the landing weight was taken to be 10 tons. At the same time, by reducing the flight range, the weight of the bomb load could be increased to 30 tons. Further work on the implementation of the rocket

bomber project was proposed to be divided into 12 stages, in which the main time was devoted to bench testing of the engine, bench tests of the interaction between the engine and the aircraft, testing of the starting device, and, finally, all stages of flight tests.

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Thus, even at the height of the war, German experts offered a bomber, the use of which (and even in combination with an atomic bomb) could really turn the tide of history. But why weren't all the forces of German industry thrown into its execution? There were several reasons for this. Firstly, the Nazi elite

was unable to accept the revolutionary nature of the idea. It does not seem to have reached Hitler at all. And if it did, it was not perceived by them. In rocket circles, Senger's project was perceived very cautiously: its implementation could interfere with the A-4 rocket program and other purely rocket programs of Peenemünde. And taking advantage of the fact that it was still about the plane, they tried to push the project to the ranks of the Luftwaffe; rocket technology was under the jurisdiction of the command of the ground forces.

Well, they considered that such a project would require at least four to five years of hard work before the first flight. Before him now? And in general, Zenger and Bredt were strangers among aviators ... In general, the

project was slowly put on the brakes and tried to forget about it. How right were the

critics of the project? Let's think logically. After the first shock of our specialists: after all, in our RNII only in 1943 they received a reliable rocket engine with a thrust of 1.5 tons, Isaev dreamed of bringing the engine to a thrust of 2-3 tons in a year or two, and then in 1944 an engine was brought from Poland "V-2" with a thrust of almost 30 tons, in 1945 a proposal was discovered to create an aircraft with an engine thrust of 100 tons (!), A sobering up came. Bolkhovitinov's deputy MAI professor Genrikh Naumovich

Abramovich, who flew to Berlin from Moscow in June, having got acquainted with Zenger's work, said that such an abundance of gas-kinetic, aerodynamic and gas-plasma problems require deep scientific study. And the matter will come to the designers, God forbid, in ten years: "It is easier to make a rocket than such an aircraft."

But he was also an overly optimistic person. We can now say that Zenger's proposal was ahead of its time by at least 25 years. The first space plane in the form of the Space Shuttle flew for the first time only in 1981. But it took off vertically, like the second stage of a rocket. And there is still no real aerospace vehicle with a horizontal launch. In modern Germany, an aerospace system is being designed, named after the

pioneer of this idea "Senger". The largest German aviation firms are involved in the work on this program. The space plane is designed on the basis of promising, but realizable technology and is intended to transport various cargoes into space while reducing cost, ensuring safety, reliability and versatility of use.

It differs fundamentally from the project of the 1940s in that horizontal acceleration is carried out not by a catapult, but by a special accelerating aircraft, on the back of which the actual space plane is mounted, capable of putting the same 10 tons into a near-Earth orbit up to 300 kilometers high. Of course, Eigen Senger in

1944 did not even dream of those materials, engines, navigation and control methods that German scientists are now working on with access to

achievements of advanced space technologies. In the end, apparently, he himself understood some of the fantastic nature of his development. He died relatively recently, having come to terms with the idea that he would no longer see the plane named after him.

So in this case, the hope for a miracle weapon would not have come true if all the forces of the Third Reich were thrown into its implementation. So in Peenemenunde they correctly gave preference to the A9 project. And we will talk about this in detail in the next chapter.

For now, let's talk about this.

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Dr. Senger had nothing to do with the rocket planes built or designed by the Germans during World War II, such as the Messerschmitt Me-163B ("Comet"), the DFS-228 reconnaissance aircraft, or the reconnaissance version of the DFS-346 twin-engine bomber capable of theoretically climb 30 kilometers and develop a speed of 2700 kilometers per hour. All of these aircraft were equipped with rocket engines developed at the Walther plant in Kiel. As already mentioned, for the first time in Germany, high concentration hydrogen peroxide was obtained on an industrial scale in 1936.

Some Walter engines used it as an oxidizer with certain fuels; these engines were called "hot". In other engines, 80% hydrogen peroxide served as a source of energy obtained from its catalytic decomposition; these engines became known as "cold engines".

Walter's first rocket engine for aircraft was the RI engine, which was flight tested in 1937 on a Heinkel aircraft, on which the conventional piston engine was retained. In tests, the engine created a thrust of about 350 kilograms with a second fuel consumption of about 3.3 kilograms.

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In the same year, the German Air Ministry approached Lippisch with a request to design a high-speed fighter, while he was only given the power of the engine that was to be installed on the aircraft. The project developed by Lippisch was conventionally designated DFS-194 - after the initial letters of the name of the German research institute for non-powered flight, where Lippisch worked for many years. “Building easier and faster!” - such was the slogan of that time in Germany, which was on the

verge of a military catastrophe. No expensive materials, nothing unrealizable. We must learn to make planes from what is at hand.

The model proposed by Lippisch - R 12 - exactly met all the requirements. It was planned that the new aircraft would be equipped with a ramjet engine, simple and cheap - just such an engine was equipped with the "flying bomb" Fi 103. Fuel was also the most affordable: a mixture of coal granulate and fuel oil.

On that, however, the designer did not calm down. After numerous alterations, the P 13a appeared on his drawing board: a project of a “tailless” aircraft, which actually consisted of an engine and a wing ... In general, Lippisch

proposed a supersonic fighter, the distinguishing feature of which was a cantilever delta wing: the sweep along its leading edge was 60 degrees, and the thickness of the profile reached 15 percent. A ramjet engine (ramjet) was placed in the middle of the wing; coal served as fuel, and valves helped regulate a wide range of exhaust gases. In addition, the designer proposed to equip the R 13a aircraft with a rocket engine,

to accelerate the car to a speed of 150 kilometers per hour when the ramjet turns on.

The vertical plumage, according to Lippisch, looked like this: a triangular keel, partially glazed and installed along the line of symmetry of the wing, that is, in the middle of it. The sweep of the keel was also equal to 60 degrees. The pilot was placed inside it. Thickness

profile accounted for 17.5 percent; all edges of the wing and the nose of the rudder were rounded. The design did not include any chassis. Instead, there were skids - they were located in the center of the wing and advanced before landing.

In order to test the flight features of this unusual model, in May 1944, flight tests of the reduced-size P 13 model began on the Spitzerberg mountain near Vienna. In August 1944, the behavior of the model began to be studied in Göttingen, in a supersonic wind tunnel owned by the Aerodynamic Testing Society (AVA). Finally, it was decided to test in practice a piloted model, made one by one, with exact observance of dimensions - but made of wood and without an engine.

The order for the construction of this aircraft was received by the flight technical group (FFG), which operated at the Darmstadt Polytechnic Institute. However, on the night of September 11-12, 1944, the premises and workshops belonging to the flight technical group were bombed. Everything that was saved was taken to other cities. Then Lippisch was

helped by Leo Schmidt. He represented the German Experimental Aeronautical Institute and supervised the work of the flight technical group. Thanks to his efforts, the unfinished D 33 model was delivered to the airfield in the town of Prien, on Lake Chiemse. The hangar of the Munich flight technical group was located there, and there, with the participation of its employees, it was possible to complete the construction of the aircraft. Now it was called DM 1 (the letter D meant Darmstadt, M - Munich). It was planned that

the tug would take the rocket plane, attached to it with a three-point hitch, to a certain height. Here they will be separated, and the aircraft will slide along an inclined path. Powder rockets will help to disperse it to 800 kilometers per hour. That was the test plan.

At the beginning of 1945, the testers had two brand new Siebel 204 A devices at their disposal. They were meant for towing. Hans Zacher was responsible for the aeromechanics and flight characteristics of the machine, as well as for the upcoming flight. He was an employee of the German Gliding Research Institute. In all likelihood, he would have become the first pilot of the DM-1, but the war was already coming to an end and it was not necessary to test the new aircraft in practice. On May 3, 1945,

American troops occupied the airfield in Prien and found a half-finished model DM 1 there. The Americans immediately took this unique “sky bird” under strict protection, hoping to complete and test it.

At first, the Americans planned to conduct flight tests of the DM 1 model right on the spot, in Germany. They had at their disposal such a reliable tug as the Douglas C-47. However, it was soon decided that the rocket plane would be better to be thoroughly tested in the United States. So, the US Air Force soldiers packed the plane in a suitable box and secured it so that it would not be damaged by the sea roll. The Americans did not even forget to "pay off" with the Germans for this trophy. They issued a receipt to the local authorities stating that they had seized the aircraft as reparation payments.

However, after the test cycle, the engineers from Langley were dissatisfied with the lift and flow conditions. Lippisch explained this by the influence of the so-called Reynolds number (it characterizes too early stall). Then they tried to attach a “sharp edge” to the bow of the wing. The scores have improved. As part of the experiments, the DM 1 model was rebuilt many times - often beyond recognition. The results of the work were summarized in a NASA report. That, in fact, was the end of it all. Another hope for a miracle bird did not come true.

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Perhaps the most interesting, from the point of view of practice, was the Me-163 aircraft, which began to be designed even before the war. In 1938, the almost completed project, together with the design team, which included Lippisch, already known to us, were transferred to the Messerschmitt company, which already had experience in creating high-speed aircraft.

But when the glider itself was almost ready, the question arose about the engine. Engineers

firms then worked hard on turbojet engines, while also working on launch boosters. One of the developments was the launch booster, which was intended to increase the maneuverability of the aircraft in the air. This accelerator was proposed as an engine for the new aircraft.

But then Professor Walter proposed a more advanced engine, which worked on the principle of decomposition of hydrogen peroxide with a solution of calcium permanganate. Both liquids were fed into the combustion chamber by pumps driven by a turbine that used the energy of the same reaction that took place in a special steam-gas generator.

The first flight tests of such a "cold" engine, however, were unsuccessful. "Not suitable for combat use!" - that was the decision of the Ministry of Aviation. Shortly thereafter, Messerschmitt and Lippisch fell out. Lippisch left, and Messerschmitt's engineers began to finish the design on their own. The new model began to be designated Me-163B, and Walter proposed a new, this time "hot" engine for it, which received the official designation "109-509". The fuel for the "hot" version of the engine was called "C-damask". It consisted of 30 percent hydrazine hydrate, 57 percent methanol, and 13 percent

of water.

The 109–509 engine could run for 15–20 minutes at minimum fuel consumption, and with full thrust, the operating time was reduced to 4 minutes 11 seconds. In order to increase the time the aircraft was in the air, Walter developed a new version of the engine, which received the designation "109-509C". It differed from the first one in that it had an auxiliary "march" chamber - a small jet engine located under the main one and creating thrust up to 300 kilograms. This was enough to keep the aircraft in the air. The main engine ("109-509C") was about 10 percent more powerful than the "105-109" engine, if only because the Me-163C aircraft for which it was designed was larger than the Me-163B . In 1944,

the Me-163 aircraft was tested in combat and an order was given to start mass production of the machine under a new name - "Comet". However, at that time, the Messerschmitt company was fulfilling another, more urgent order, and the Me-163B project had to be transferred to the Focke-Ahgelis company without a firm indication of who was responsible for what. Later in the same 1944, the Me-163B was sent to the Junkers company, whose engineers redesigned it again and

assigned the name Ju-248 to the new version, later replaced by 8-263. And this option, due to the confusion that began to shake the foundations of the Third Reich, never made it to the front. Allies should only rejoice in this. For, appear "8-263" at the front, they

it would have been tough. The car turned out to be quite successful. Judge for yourself.

Me-163B had a very small size. The span of its swept wings was only 9 meters, the total length was 5.7 meters, and the height was 2.4 meters. The aircraft had no tail, except for a vertical stabilizer with a rudder. The takeoff was carried out using a wheeled landing gear, which was then dropped; landing was carried out on special retractable "skis". The landing speed of the Me-163B was low - 150 kilometers per hour, but the maximum speed was 814 kilometers per hour at sea level and 896 kilometers per hour at the level of 12,000 meters.

Thus, it would be quite difficult to shoot down such an aircraft. Himself
he could catch up and cut off almost any aircraft of that time.

Stillborn monsters?

However, in the last phase of World War II, the development of rocket aircraft took a different direction. Both the Germans and the Japanese realized that the growing Allied air superiority could not be fought with anti-aircraft fire alone. But neither in Germany, nor later in Japan, there were either a sufficient number of fighters or trained pilots. The only possible alternative could be the so-called

piloted projectiles. This
concept was expressed at the time by Oberth. He wrote that, in theory, a rocket plane should be a "flying tank" that crashes into the formation of enemy aircraft and destroys them with cannon fire and ramming. In 1943, the same Dr. Lippisch made a more
specific proposal. The "ramming missile", as it was called, was supposed to have a powerful pointed steel nose and three arrow-shaped planes near the tail, combining the functions of stabilizers and control planes. The rocket was supposed to be equipped with a liquid-propellant rocket engine and a powder launch accelerator. Its ceiling was not exactly specified, but it had to be several times higher than the ceiling of the attacked bombers.

The "ramming missile" was supposed to launch vertically or almost vertically and, after the separation of the launch accelerator, be directed by the pilot to the enemy aircraft for a ramming strike. If necessary, the pilot could jump out or eject from the rocket. At a point close to its maximum altitude, the rocket's parachute would open, allowing it to drop to the ground for reuse.

On August 1, 1944, the development of the first “ramming missile”, called the “Nutter”, began at the Bachemwerke plant. It was a small rocket-propelled projectile, designed for a vertical launch with a short launch rail. The Nutter's engine ran on hydrogen peroxide; the takeoff was provided by several Schmidding launch powder rockets.

It was also important that the "aircraft-rocket" could be produced and assembled by low-skilled workers in small factories. The main material in its construction was wood. The hull consisted of three main compartments; in the
front were placed 24 combat missiles connected to an electric fuse. They were launched at the same time. Then came the pilot's compartment and, at the end, the tail compartment with Walther's rocket engine. Upon reaching the height at which the enemy bombers
were flying, the pilot had to transfer the rocket to horizontal flight, direct it to the formation of enemy aircraft and launch its 24 missiles. Then the pilot, by moving the control stick forward to failure, would activate the mechanism that divided the Natter into parts. First, the nose compartment free from missiles was separated, then a parachute with a Walther engine was thrown out, and

then the pilot.

As you can see, the Nutter's designer followed the same idea that led Lippisch to the "ramming missile" project, but the ramming was replaced here by a more modern missile attack.

The German Air Force approved the Natter project, and after testing the model in supersonic wind tunnel in Braunschweig, 15 prototypes of the Nutter were built.
Glider tests were very unsatisfactory. But there was no time to repeat them. Therefore, an attempt was made to take off with a pilot, which ended in disaster. At an altitude of 150 meters, the cockpit cover came off.
Since the pilot's head support was attached to it, it is likely that the pilot died at the same moment from a fracture of the spine. But the device itself continued to gain altitude, flying at an angle of about 15 degrees. Only at an altitude of 1500 meters, when the fuel ran out, the Natter rolled over, dived and crashed into the ground. Nevertheless, the production of new items was put on stream and by
the end of the war the number of Natters ordered by Bachemwerke reached 200. But they never reached the front - there were no pilots capable of flying them. It is said that the German government promised to hand over the plans for these weapons
to the Japanese, but no one knows whether this promise was kept. The Japanese, as you know, created a different type of manned projectiles. These were the so-called "kamikaze" - aircraft controlled by suicide pilots. In practice, any type of aircraft capable of carrying an explosive charge and diving at a target could be used as a "kamikaze". But one of them - "Baka" - was specially created for such attacks. Its length was only 6 meters, and its wingspan was 5 meters. In the bow was placed combat

charge weighing 540 kilograms. The propulsion system was represented by several large powder rockets. The Baca was carried by the Betty bomber, with both pilots being connected by telephone until the pilot of the carrier aircraft decided it was time to release the suicide bomber.

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Perhaps the story of "Nutter" can serve as a good example of how, because of the haste, a good idea, in general, remains unrealized. And then they also mock her: here, they say, they came up with the devil knows what ...

However, sometimes the designers of the Third Reich really allowed themselves to be laughed at. So, by the summer of 1943, the Nazis trumpeted to the whole world about the "outstanding achievement" in the field of aviation - the Focke-Wulf-190 heavy fighter, armed with four guns. However, in air battles, he could not resist the Soviet Yaks and Lavochkins - the car turned out to be too heavy and unmaneuverable. Meanwhile, massive Allied bomber raids began on Germany itself, in which

hundreds of "flying fortresses" took part. The Focke-Wulfs were also unable to cope with them. It was then that the intensive development of the original fighter model began under the conditional name “bombersege” - “saw for bombers”. German designers

proceeded from the fact that the bomber's most vulnerable spot was the lower part of the fuselage. It is enough to install several cannons on a fighter in a vertical plane, they believed, they would get an ideal weapon against "flying fortresses". The pilot will only have to fly under the belly of the enemy aircraft and press the trigger.

In practice, the matter turned out to be much more difficult. Serial aircraft guns, when firing from such an unusual position, gave too many misses, but the Focke-Wulf itself lost any chance of success in the event of a fight with enemy fighters. Hitler's specialists tried to replace the aircraft guns with recoilless,

small-caliber guns. But even here they failed. It became quite clear that, for all its seeming originality, the idea of vertical placement of weapons in the fuselage of a fighter is simply a design dummy. Meanwhile, the power of the Allied raids on the cities and factories of the Nazi Reich was continuously growing. During each of them, approximately 2-3 thousand tons of bombs weighing 2, 3, 5

were dropped, and at the end of the war - up to 10 tons each. The air defense of the Nazis was clearly losing the battle with American and British aircraft, while on the Eastern Front, Soviet attack aircraft and bombers inflicted significant losses on the Wehrmacht troops. The Fuhrer and his high command categorically demanded that the Nazi gunsmiths at any cost create new types of anti-aircraft weapons. But neither the thunder and lightning flashing at the meetings at the Fuhrer's headquarters, nor the generous promises to inventors and industrialists, could ever lead the German design idea out of the impasse. The only thing that began to enter service with air defense units by the end of the war was the Luftfaust and Kurtzsaytsperre, which had no effect on the course of hostilities. The "Kurzzeitsperre" - "short-term barrier" - was relatively simple in design. Around any important object at a distance of 25 meters from each other, a continuous ring of rockets was placed. When an enemy bomber approached, the missiles were simultaneously launched into the air and exploded at an altitude of 1000 meters, leaving small parachutes in the sky, which

were connected to the ground with steel cables. Theoretically, the “Kurzzaitsperre” was supposed to form a continuous impenetrable fence around the defended object, but in practice it turned out to be an ineffective, semi-artisanal undertaking, actually copied from air barrage balloons. The creators of this "wonder weapon" did not take into account that the planes can easily go to the object and over the "fence". Moreover, the "miracle weapon" itself was kept in the air only in calm weather. Even a small gust of wind carried the parachutes to the side or nailed them to the ground.

"Luftfaust" - "air fist" - was more original. In this case, the German gunsmiths tried to create a light anti-aircraft gun by combining nine 20mm bazookas together. The fire from it was conducted by one person directly from the shoulder. After pressing the trigger, an electric ignition device set fire to the charges of the first five missiles, and after a tenth of a second, the remaining four. As a result, the missiles simultaneously went to the target in a kind of flock and did not knock each other out of the given direction with the exhaust of burnt gases. But the “air fist” had one significant drawback - its missiles could hit aircraft at an altitude of no more than 500 meters.

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However, all of the above does not mean at all that the designers of the Luftwaffe no longer had any valuable ideas. Consider, as an example, at least the project of a "high-rise
hunter."

Based on the idea of creating a missile interceptor, put forward by Wernher von Braun back in 1941, Eric Bachem, the technical director of the Fieseler company, created two draft designs of rocket-powered vertical take-off aircraft. The first, known as the Fi-166 "High-altitude Hunter-1", involved the

use of a rocket truck, which was located under the fuselage of a jet fighter, equipped with two engines under each of the wings. The "horse and rider" system was supposed to provide a high-speed rise of the fighter to a height of 12,000 meters. After separation, the rocket-truck had to return to the ground with the help of a parachute and prepare for further use. The second project, known as the Fi-166 "High-altitude hunter-2",

was a large

a two-seat aircraft designed for pure rocket takeoff.

However, none of the options has moved to the stage of practical implementation. At first, interceptors were not needed, and when the Reich Air Force requested a local defense fighter in the spring of 1944, it was already

late.

True, Bachem wanted to propose a project for the Bachem BA-349 Nutter aircraft - the world's first vertical take-off interceptor - but other designers had already managed to run across the road.

So, for example, engineer Reiniger, who worked for Heinkel, proposed the Lerche II (“Lark”) vertical takeoff and landing interceptor aircraft. He based his proposal on the modernization of an even earlier development of Heinkel himself, who invented the Wasp. This was the name of the interceptor, which was supposed to fly using a turbojet engine. Moreover, unlike the current interceptors, Heinkel's Wasp launched vertically and landed in the same way thanks to the unique cylindrical wing. "Wasp" was designed at the Heinkel plant in Vienna in 1944. It was supposed to be equipped with a six-blade turboprop engine of the Daimler-Benz DBPTL

021 type, developed on the basis of the Heinkel Hirt He S Oil engine with a power of 2000 horsepower. It was supposed to use both jet thrust and a propeller. The engine was located in the middle of the aircraft. He was supposed to provide takeoff, landing and marching movement. It was assumed that the "Wasp" will have a speed of 800 kilometers per hour.

At first, this winged miracle would rise vertically upwards, and then lower its nose for horizontal flight. Landing seemed more difficult: the plane had to land nose down, braking with all its might with its tail planes, which in this case were transferred to a horizontal position. And how soft such a landing would be, in practice, no one has checked. Although according to the calculations everything worked out fine.

Reiniger began work on the project on February 25, 1945, and completed preliminary sketch work on March 8, 1945. The Lark had two Daimler Benz DB605D engines with a total capacity of 4,000 horsepower. The aircraft was kept in the air by a kind of winged platform, which was also an important part of the air cooling system, and was equipped with an anti-rotation propeller system that rotated

around the middle part of the hull, and the propellers had to provide both vertical movement during takeoff and landing, and horizontal marching movement. It was assumed that the Lark II would reach a maximum speed of about 800 kilometers per hour.

Sites for "Os" and "larks" were intended to be located directly around strategically important objects. However, the Germans did not have enough time to bring to mind an interesting idea. They say that Soviet and American designers tried to pick it up after the war. However, they did not come up with anything worthwhile. Either the idea turned out to be too sophisticated, or the performers were not qualified enough ...

Another secret of the Third Reich?

And in conclusion of the chapter, let's talk about another mysterious project, fate which haunts researchers for a good half century.

On March 25, 1942, the Polish captain, pilot Roman Sobinsky from the British Air Force strategic bomber squadron participated in a night raid on the German city of Essen. Having completed the task, he, along with everyone else, turned back, rising to a height of 500 meters. But he just leaned back in his chair with relief to take a break, as the machine gunner exclaimed in alarm:

“We are being pursued by an unknown

device!” - A new fighter? Sobinsky asked, remembering the unsafe Messerschmitt-110. “No, sir captain,” replied the

machine gunner, “it seems that this is not a plane. It has an indefinite shape and glows ... Then Sobinsky himself saw an amazing object

that ominously played with yellow-red tints. The reaction of the pilot was instantaneous and quite natural for a pilot attacked over enemy territory. “I thought,” he later stated in his report, “that this was some new diabolical thing of the Germans, and ordered the machine gunner to open aimed fire.” However, the device, which approached at a distance of up to 150 meters, completely ignored the attack, and there was something - it did not receive any, at least a little noticeable damage. The frightened machine gunner stopped firing. After a quarter of an hour of flying "in the ranks" of the bombers, the object rapidly rose and disappeared from sight with incredible speed. A month earlier, on February 26, 1942, a similar object showed interest in the cruiser Tromp of the occupied Netherlands. The ship's commander described it as a giant disc, apparently

made of aluminum. An unknown guest watched the sailors for three hours, not fearing them. But even those, convinced of his peaceful behavior, did not open fire. The farewell was traditional - the mysterious apparatus suddenly soared up at a speed of about 6000 kilometers per hour and disappeared.

March 14, 1942 at the secret Norwegian base "Banak", which belonged to Twaffeflotte-5, an alarm was announced - a stranger appeared on the radar screen. The best base, Captain Fisher, lifted the car into the air and at an altitude of 3500 meters discovered a mysterious object. “The alien apparatus seemed to be made of metal and had an aircraft fuselage 100 meters long and about 15 meters in diameter,” the captain reported. - There was something similar to antennas ahead. Although he did not have motors visible from the outside, he flew horizontally. I followed him for several minutes, after which, to my surprise, he suddenly took the height and

suddenly disappeared."

And at the end of 1942, a German submarine fired cannons at a silver spindle-shaped object about 80 meters long, which quickly and silently flew 300 meters from it, not paying attention to heavy fire.

* * *

On this, such strange meetings with both the one and the other of the warring parties did not end there. For example, in October 1943, the Allies bombed the largest in Europe

ball bearing factory in Schweinfurt, Germany. 700 heavy bombers of the 8th Air Force of the USA participated in the operation, and 1300 American and British fighters accompanied them. The mass nature of the air battle can be judged at least by the losses: the Allies had 111 downed fighters, about 60 downed or damaged bombers, the Germans had about 300 downed aircraft. It would seem that in such a hell, which the French pilot Pierre Klosterman compared with an aquarium full of crazy sharks, nothing could capture the imagination of the pilots, and yet ...

British Major R. F. Holmes, who was in command of the bombers, reported that as they passed over the factory, a group of large shiny disks suddenly appeared, which, as if curious, rushed towards them. We calmly crossed the line of fire of German aircraft and approached the American "flying fortresses". They also opened heavy fire from onboard machine guns, but again with zero effect.

However, the crews did not have time to gossip on the topic: “Who else has been brought to us?” - it was necessary to fight off the pressing German fighters. Well, then ... Major Holmes's plane survived, and the first thing this phlegmatic Englishman did when he landed at the base was to submit a detailed report to the command. It, in turn, asked intelligence to conduct a thorough investigation. The answer came three months later. In it, they say, then the famous abbreviation UFO was used for the first time - according to the initial letters of the English name "unidentified flying object" (UFO), and the conclusion was drawn: the disks have nothing to do with the Luftwaffe or other air forces on Earth. The Americans came to the same conclusion. Therefore, both in the UK and in the USA, research groups were immediately organized, operating in the strictest secrecy.

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Not bypassed the problem of UFOs and our compatriots. Few have probably heard about it, but the first rumors about the appearance of "flying saucers" over the battlefield reached the Supreme Commander back in 1942, during the Battle of Stalingrad. Stalin at first left these reports without any visible reaction, since the silver discs had no effect on the course of the battle.

But after the war, when information reached him that the Americans were very interested in this problem, he remembered the UFO again. S.P. Korolev was summoned to the Kremlin. He was handed a pack of foreign newspapers and magazines, adding:

- Comrade Stalin asks you to express your opinion ... After

which they gave translators and locked me up in one of the Kremlin offices for three days. “On

the third day, Stalin personally invited me to his place,” Korolev recalled. - I reported to him that the phenomenon is interesting, but does not pose a danger to the state. Stalin replied that other scientists, whom he asked to get acquainted with the materials, were of the same opinion as me ...

Nevertheless, from that moment on, all reports of UFOs in our country were classified, reports about them were sent to the KGB.

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Such a reaction becomes understandable, given that in Germany, apparently, the problem of UFOs was dealt with earlier than the allies. At the end of the same 1942, the Sonderburo-13 was created there, which was called upon to study mysterious air vehicles. His activities were codenamed "Operation Uranus".

The result of all this, according to the Czech magazine "Signal", was the creation of their own ... "flying saucers". The testimonies of nineteen Wehrmacht soldiers and officers who served during World War II in Czechoslovakia, in one of the secret laboratories for the creation of a new type of weapon, have been preserved, the magazine reports. These soldiers and officers witnessed the flights of an unusual aircraft. It was a silver disk 6 meters in diameter with a truncated hull in the center and a drop-shaped cabin.

The structure was mounted on four small wheels. According to the story of one of the eyewitnesses, he observed the launch of such a device in the fall of 1943.

This information to some extent coincides with the facts set forth in a curious manuscript that recently caught my eye in the reader's mail. “Wherever fate threw me,” wrote Konstantin Tyuts, an electronics engineer, in a cover letter to her. - I had to travel around South America. Moreover, he climbed into such corners that, frankly, they lie quite far from the tourist trails. I had to meet different people. But that meeting remained in the memory forever. It was in Uruguay, in 1987. At the end of August, in the colony of emigrants, which is 70 kilometers from

Montevideo, a traditional holiday was held - the festival was not a festival, but everyone “buzzed” famously. I'm not a big fan of "this thing", so I lingered at the Israeli pavilion (the exposition was painfully interesting there), and my colleague walked away "for a beer." Here I look - an elderly smart man in a light-colored shirt, ironed trousers is standing nearby and staring at me intently. Came up and talked. It turns out that he caught my dialect, and this attracted him. Both of us, as it turned out, were from the Donetsk region, from Gorlovka. His name was Vasily Petrovich Konstantinov. Then, taking the military attache with us, we went to his house, sat all evening ... Konstantinov ended up in Uruguay just like dozens, and maybe hundreds of his compatriots.

Having been freed from a concentration camp in Germany, he moved not to the east, to "infiltration", but to the other side, which saved him. I wandered around Europe, settled in Uruguay. For a long time I kept in my memory that amazing thing that I took out from the distant 41-43s. And finally, he spoke out. In 1989, Vasily died: age, heart ... I have Vasily Konstantinov's notes, and, offering a fragment of his memoirs, I hope that he will amaze you in the same way that the oral story of their author struck me at one time. The

manuscript itself followed...

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It was hot July 1941. Every now and then, unhappy pictures of our retreat rose up before my eyes - airfields pitted with funnels, a glow in the half-sky from entire squadrons of our aircraft burning on the ground. The constant howl of German aircraft. Piles of metal interspersed with mangled human bodies. A suffocating haze and a stench from wheat fields engulfed in flames...

After the first skirmishes with the enemy near Vinnitsa (in the area of our then main headquarters), our unit fought its way to Kyiv. Sometimes, for recreation, we took refuge in the forests. Finally we came to the highway six kilometers from Kyiv. I don’t know what exactly came to our freshly baked commissar’s mind, but all the survivors were ordered to line up in a column and march along the highway towards Kyiv with a song. From the outside, it all looked like this: a group of exhausted people in windings, with heavy three-rulers of the 1941 model, were moving towards the city. We only had time to walk just a kilometer. A German reconnaissance plane appeared in the blue-black sky from the heat and conflagrations, and then - the bombing ... So fate divided us into the living and the dead. Five survived, as it turned out later in the camp.

I woke up after an air raid with a shell shock - my head was buzzing, everything was swimming before my eyes, and here - a kid, his shirt sleeves were rolled up, and he was threatening with a machine gun: "Rusish Schwein!" In the camp, I remember the rantings of our commissar about justice, brotherhood, mutual assistance, until they shared and ate the last crumbs of my miraculously surviving NZ together. And then I fell down with typhus, but fate gave me life - slowly I began to get out. The body needed food. "Friends", including the commissar, at night, hiding from each other, crushed the unripe potatoes collected during the day in the neighboring field. And what am I - why transfer kindness to a dying person? .. Then I was transferred to the

Auschwitz camp for trying to escape. Until now, nightmares have haunted me at night - the barking of cannibal German shepherds, ready on order

SS guards to tear you to pieces, the cries of camp foremen-capos, the moaning of the dying near the barracks ... Memories pile up like a terrible dream when, in a pile of half-dead bodies and corpses, I, a prisoner in the convalescent unit, again ill with relapsing fever, was waiting for my turn in the store at one from the crematorium ovens. There was a nauseating stench of burnt human flesh all around. A low bow to a female doctor, a German woman (there was an article about her in the Izvestia newspaper in 1984), who saved me and got me out. That's how I turned out to be a different person, and even with the documents of a mechanical engineer.

Somewhere in August 1943, some of the prisoners, including myself, were transferred near Peenemünde, to the KTs-A-4 camp, as it turned out, to eliminate the consequences of Operation Hydra, a British air raid. By order of the executioner - SS Brigadeführer Hans Kampler - the prisoners of Auschwitz became the "katsetniks" of the Peenemünde training ground. The head of the range, Major General Deriberger, was forced to involve prisoners of KTs-A-4 to speed up the restoration work. And then one

day, in September 1943, I was lucky enough to witness one interesting event. Our group was finishing the demolition

of a broken reinforced concrete wall. The whole brigade was taken away under guard for a lunch break, and I, as having injured my leg (it turned out to be a dislocation), remained to wait for my fate. Somehow I managed to set the bone myself, but the car had already left.

Suddenly, on a concrete platform near one of the nearby hangars, four workers rolled out a round, resembling a basin turned upside down, an apparatus with a transparent teardrop-shaped cabin in the middle. And on small inflatable wheels. Then, with a wave of the hand of a short, overweight man, a strange heavy apparatus, shimmering in the sun with silvery metal and shuddering with every gust of wind, made a hissing sound like the noise of a blowtorch, broke away from the concrete platform and hovered at a height of about five meters. Having swayed for a short time in the air - like a “roly-poly-up” - the apparatus suddenly seemed to be transformed: its contours began to gradually blur. They seem to be out of focus.

Then the device abruptly, like a top, jumped up and began to gain altitude like a snake. The flight, judging by the rocking, was unsteady. Suddenly a gust of wind came from the Baltic, and the strange structure, turning over in the air, began to lose altitude sharply. I was doused with a stream of burning, ethyl alcohol and hot air. There was a blow, a crunch of breaking parts - the car fell not far from me. Instinctively, I ran towards her. We need to save the pilot - the man is the same! The pilot's body hung lifelessly from the broken cockpit, the fragments of the skin, flooded with fuel, were gradually enveloped in bluish wisps of flame. The still hissing jet engine was sharply exposed: in the next moment everything was on fire ... This was my first acquaintance with an experimental apparatus

that had a propulsion system - a modernized version of a jet engine for Messerschmitt-262 aircraft. Flue gases, escaping from the guide nozzle, flowed around the body and, as it were, interacted with the surrounding air, forming a rotating cocoon of air around the structure and thereby creating an air cushion for the movement of the machine ...

* * *

This is where the manuscript ended, but what has already been said is enough for a group of voluntary experts from the Tekhnika-Molodezhi magazine to try to determine what kind of flying machine the former prisoner of the KTs-A-4 camp saw? And this is what, according to engineer Yuri Stroganov, they did.

Model No. 1 of a disk-shaped aircraft was created by German engineers Schriver and Gabermol back in 1940, and tested in February 1941 near Prague. This "saucer" is considered the world's first vertical take-off aircraft. By design, it somewhat resembled a lying bicycle wheel: a wide ring rotated around the cab, the role of the “spokes” of which was played by effortlessly adjustable blades. They could be put in the right position for both horizontal and vertical flight. At first, the pilot sat as in a conventional aircraft, then his position was changed to almost recumbent. The machine brought a lot of problems to the designers, because

the slightest imbalance caused significant vibration, especially at high speeds, which was the main cause of accidents. An attempt was made to make the outer rim heavier, but in the end the "wheel with a wing" exhausted its possibilities.

Model No. 2, called the "vertical aircraft", was an improved version of the previous one. Its size has been increased to accommodate two pilots lying in chairs. Engines were strengthened, fuel reserves were increased. For stabilization, a steering mechanism similar to an aircraft was used. The speed reached about 1200 kilometers per hour. As soon as the desired height was gained, the bearing blades changed their position, and the device moved like modern helicopters.

Alas, these two models were destined to remain at the level of experimental developments. Many technical and technological obstacles did not allow them to be brought up to standard, not to mention serial production. It was then, when a critical situation arose, and Sonderburo-13 appeared, which attracted the most experienced test pilots and the best scientists of the "Third Reich" to research. Thanks to his support, it became possible to create a disk that left far behind not only all the then, but also some modern aircraft.

Model No. 3 was made in two versions: 38 and 68 meters in diameter. It was powered by a "smokeless and flameless" engine by the Austrian inventor Viktor Schauberger. (Apparently, one of these options, and perhaps even an earlier prototype of even smaller dimensions, was seen by a prisoner of the KTs-A-4 camp.) The inventor kept the

principle of operation of his engine in the strictest confidence. Only one thing is known: the principle of its operation was based on an explosion, and during operation it consumed only water and air. The machine, which received the code name "Disk Belonze", was ringed by an installation of 12 inclined jet engines. They cooled the “explosive” engine with their jets and, sucking in air, created a rarefaction area on top of the apparatus, which contributed to its lifting with less effort.

On February 19, 1945, the Disk Belonze made its first and last experimental flight. In 3 minutes, test pilots reached an altitude of 15,000 meters and a speed of 2,200 kilometers per hour in horizontal motion. He could hover in the air and fly back and forth with almost no turns, but he had folding racks for landing.

The apparatus, which cost millions, was destroyed at the end of the war. Although the plant in Breslau (now Wroclaw), where it was built, fell into the hands of our troops, it did nothing. Schriever and Schauberger escaped Soviet captivity and moved to the United States.

In a letter to a friend in August 1958, Viktor Schauberger wrote: “The model tested in February 1945 was built in cooperation with first-class explosion engineers from among the prisoners of the Mauthausen concentration camp. Then they were taken to the camp, for them it was the end. After the war, I heard that there was an intensive development of disk-shaped aircraft, but, despite the elapsed time and a lot of documents captured in Germany, the countries leading the development did not create at least something similar to my model. It was blown up on Keitel's orders."

Schauberger was offered $3 million by the Americans for revealing the secret of his flying disc and especially the "explosive" engine. However, he replied that until the signing of an international agreement on complete disarmament, nothing could be made public and that its discovery belonged to the future.

To be honest, the legend is fresh ... Just remember how Wernher von Braun unfolded in the States, on whose rockets the Americans eventually flew to the moon (we will talk about his activities in detail in the next chapter). It is unlikely that Schauberger would have resisted the temptation if he could show the goods with his face. But he didn't seem to have anything to show. For the simple reason that he, it can be assumed, if he did not deceive, then he simply did not have all the necessary information. And most of his assistants, first-class specialists, ended up in Mauthausen and other death camps. However, the allies received a hint that such work was still underway. And not

only from Schauberger. Our units, having seized a secret factory in Breslau (Wroclaw), also probably found something. And after a while, Soviet specialists deployed

own work on the creation of vertical take-off vehicles.

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Evidence of this can be at least a "barrel", which I happened to see in one of the hangars of the aviation museum in Monin. The official name of this outlandish aircraft is a turbofly. It was tested in the late 50s by our famous test pilot Yu. A. Garnaev. Here is how an eyewitness, honored test pilot, Colonel Arkady Bogorodsky described this event:

> "The engine is running, the flames cut through the ground, knocking out stones and turning them into dust. This dust disperses around in clubs, and nothing is visible except dust.
>
> And suddenly, at the top of this tangle, an engine nozzle is shown, then a cabin, racks - and now you can see the whole turbolet hanging at a height of ten meters ... "

The turboplane hovered and moved due to the lifting force of a jet engine installed vertically. And it was controlled by gas rudders. So here, perhaps, a variation of the Belonze Disk took place, which then led to the creation of rocket modules for landing troops on the moon and modern vertical take-off and landing aircraft, the varieties of which - both foreign and our domestic ones - today are many.

One of the most promising, in my opinion, is the "flying loaf", or "EKIP" - an original aircraft created in our country by a team of scientists and engineers led by Doctor of Technical Sciences L. N. Shchukin.

Aeronautical engineers have long sought to improve aircraft in traditional ways. They increased the aerodynamic quality and reliability, reduced fuel consumption and the weight of an empty car - because these parameters directly affect the cost of passenger and freight transportation. However, according to a number of researchers, the maximum flight weight of aircraft made according to the classical scheme has approached the limit, for example, this applies to the heaviest aircraft in the world, the An-225 Mriya. One of the reasons for this is the design of the takeoff and landing gear, in other words, the landing gear.

An unexpected way out of this situation was proposed by L. N. Shchukin. The EKIP concern (ecology and progress) created under his leadership has already produced a number of projects for transport aircraft of a fundamentally new type with a take-off weight of 9 to 600 tons. The first thing that catches your eye is their shape, reminiscent of the notorious UFO. But if you approach the analysis of "EKIPs" from an engineering point of view, then there is nothing fantastic
will turn out.

In terms of layout, they represent a small elongation flying wing with a very thick profile, up to 37 percent of the chord length. They do not have the usual fuselage, and the payload, engines, fuel, equipment, crew and passengers are placed in the body, and only the tail and small consoles with aerodynamic controls protrude beyond the contours of the device. Instead of a wheeled chassis - an air cushion.

Aircraft designers back in the 30s dealt with the problem of creating such a "inhabited wing". One of the first to address it was K. A. Kalinin, who built the seven-engine bomber K-7 in 1933. In its wing of 20 percent thickness, office space, fuel, cargo were located, and only the crew, for a better view, was put in a gondola placed forward. Such a wing provided a very high aerodynamic quality, which directly affects the efficiency of the machine. A passenger version of the K-7 with large windows was also developed. However, the Kalinin aircraft had a lot of unused internal volume, and it was possible to increase the layout density only by increasing the

relative thickness of the wing, which was not possible at that time. As is known from the course of aerodynamics, the maximum values of the lift coefficient are obtained with a relative wing thickness of 14–16 percent. Its further increase leads to a decrease in the limiting angles of attack, the magnitude of the lift force and an increase in the frontal

resistance, which adversely affects the aerodynamic quality of the machine and its efficiency. This phenomenon is associated with the forward displacement of the separation point of the boundary layer against the oncoming air flow.

As far back as the 1930s, aviation specialists proposed to control the flow around the wing. Imagine it with a slit at the top. Through it, air is sucked off by a special device and therefore does not collide with the boundary layer flowing in the opposite direction - therefore, separation does not occur. There is another way, by the way, which has become widespread in aviation - blowing off the boundary layer at the points of its separation from the bearing surface. A combined version is also used, when the boundary layer of the wing is both sucked off and blown off. The main difficulty that designers

face here is that this consumes a significant part of the power of the power plant, which is why they use only blowing off the boundary layer, and then during landing approach, when the engines are not working at full power. It was this method that the engineers of the concern “adopted” - in the

places of the alleged separation of the flow, along the supporting body, they proposed to make slots in which air microcirculation would be created. Then the oncoming flow will not slow down - its speed will be supported by artificial vortices. By the way, the first experiments on the so-called unseparated flow were carried out back in 1978 at the Geodesy Research Institute on a thick wing model. Everything may seem very simple, but EKIP had to work hard before a successful, economical device appeared.

In addition, the air intake located in its upper part should also improve the flow around a very impressive body. Designers have already turned to such a solution, because it still reduces the likelihood of foreign objects getting into the engine during takeoff and landing. However, there was a negative interference of the air intake and the airframe of the aircraft, especially at high angles of attack. And when flying at high speed, say, 700 kilometers per hour, air intake from the top of the carrier body could lead to the appearance of local supersonic zones that degrade the aerodynamic quality of the machine. At the same time, this arrangement improves its stability. As they say, in one we win, in the other we lose. So, you have to look for the golden mean ...

Compared to conventional aircraft, EKIPs will have a 3-5 times lower specific load on the bearing surface, therefore, the inductive drag will decrease, and the maximum aerodynamic quality will increase to 17-25, while flying in the ekranoplan mode - up to 22- thirty. Therefore, "EKIPs", according to the terminology proposed by the prominent Soviet aircraft designer R. L. Bartini, should be classified as ekranoletov.

The use of landing gear on an air "cushion" will make it possible to exclude takeoff and landing only on concrete strips. Note that there have been attempts to implement it on aircraft before, but things never went beyond experiments. One of the reasons for this is a “cloud” of water drops, dust and snowflakes that escape from under the flexible guard when moving and get into the engines, settling on the body. Instead of a flexible fence, the concern's specialists used a gas-jet curtain created together with the "cushion" of the auxiliary power unit - air jets flying out at a pressure of slightly more than 1 atmosphere from nozzles located around the perimeter of the apparatus will cut off the "cushion" from the atmosphere. In addition, it is supposed to mount ionizers in the nozzles so that if positively charged dust particles fall on the body, then only in the designated places.

Perhaps it was the work of such systems that the prisoner of the concentration camp noticed. Remember, in his manuscript, he mentions that at some point the body of the aircraft began to lose its sharpness, as it were? .. But let's return to our days.

Shchukin and his team had to solve the problem of controlling the EKIPs at the beginning of the takeoff run and hover mode, when the aerodynamic systems are ineffective. For this, it is proposed to use small-sized liquid-propellant engines from the Buran orbiter, modified for new operating conditions.

The entire power plant of the EKIPs is divided into three groups. The first includes marching PK-92 or D-436, the second - unique, unparalleled dual-mode

AL-34, which will create increased pressure under the bottom of the vehicle during takeoff and provide a boundary layer control system, the third one will provide stabilization and control at low speeds, takeoff and landing.

And now let's try to compare the largest of the "EKIPs" L4-2 with the giant An-225. With the same takeoff weight of 600 tons, the L4-2 will deliver a load of 200 tons over a distance of 8,600 kilometers, while the Mriya will deliver only 4,500 kilometers. In this case, the latter will need a stationary airfield with a runway length of at least 3.5 kilometers. For R4-2, you will need a platform six times shorter. Such characteristics can be achieved thanks not only to the high aerodynamic quality of the EKIP (for Mriya it does not exceed 19), but to a greater weight return.

The layout of the "EKIP" allows you to provide passengers with an all-round view through extensive portholes made of structural glass - "stained-glass windows", as the authors call them.

... For almost 10 years, Lev Nikolaevich Shchukin had to prove the advantages of aircraft of a fundamentally new type. Initially, many authorities met his ideas with hostility, but over time, the ice of distrust was melted, and today the prospects for the use of "EKIPs" in the national economy and in the armed forces are obvious. The first prototypes of the “flying saucer” have already been created and tested, inside which not mythical aliens are placed, but our compatriots.

* * *

It is likely that the Americans have gone through a similar path in their time. And in the mysterious hangar No. 18, which journalists like to remember from time to time, there really are fragments of “flying saucers”. Only aliens have absolutely nothing to do with them - the trophies of the Second World War are stored in the hangar. And over the past decades, based on their study, the Americans have managed to create many curious aircraft. So, recently, at one of the secret US air bases, a mysterious “unknown

star".

At first, this name - "Darkstar" - was attributed to the mysterious strategic reconnaissance aircraft "Aurora". Recently, however, the fog of secrecy has gradually begun to dissipate. And it became clear that in reality it belongs to an unmanned high-altitude aircraft of Lockheed Martin, created as part of the Tier III Minus program. The official demonstration of the prototype took place on June 1, 1995 in Palmdale (Antelope Valley, California), where the company's factories are located. Prior to this, only vague guesses were made about the existence of the machine.

Unmanned high-altitude aircraft "Unknown Star" was developed jointly by Lockheed Martin and Boeing. The share of participation of each company in the implementation of the program was 50 percent. Boeing specialists were responsible for the creation of a composite wing, the supply of avionics and the preparation of the aircraft for operation. Lockheed Martin handled fuselage design, final assembly and testing.

The machine presented in Palmdale is the first of two being created under the Tier III Minus program. It is made using stealth technology. In the future, these "invisibles" will probably be tested against the Teledyne model, which was previously selected by the Pentagon as part of a program involving the creation of a whole family of reconnaissance unmanned aerial vehicles. In total, it is planned to purchase 20 vehicles from Lockheed and Teledyne each. This should allow unit commanders to receive operational information during exercises or combat operations

almost around the clock in real time. The Lockheed aircraft is designed primarily for short-range operations, in high-risk areas and at altitudes above 13,700 meters, its speed is 460-550 kilometers per hour. He is able to stay in the air for 8 hours at a distance of 900 kilometers from the base.

Structurally, the "Unknown Star" is made according to the "tailless" aerodynamic configuration, has a disc-shaped fuselage and a high aspect ratio wing with a slight reverse

sweep.

This unmanned reconnaissance aircraft operates in a fully automatic mode from takeoff to landing. It is equipped with the Westinghouse AN / APQ-183 radar (intended for the failed A-12 Avenger 2 project), which can be replaced by the Recon / Optical electronic-optical complex. The aircraft has a wingspan of 21.0 meters, a length of 4.6 meters, a height of 1.5 meters and a wing area of 29.8 square meters. The weight of the empty vehicle (including reconnaissance equipment) is about 1200 kilograms, with a full refueling - up to 3900 kilograms. Flight testing is being conducted at NASA's Dryden Test Center at Edwards Air Force Base. If they are

successful, then the aircraft can be put into service at the end of ours, the beginning of the next century.

So, as you can see, from time to time you can even benefit from seemingly empty talk about “flying saucers”.

The beginning of the rocket race of the twentieth century

On October 27, 1944, the speech of Hitler's Minister of Propaganda Goebbels was heard on the radio: “We are producing not only good, solid, but, moreover, completely new weapons in all areas of the war, with which we associate our greatest hopes regarding both the immediate and distant future. The process of technological development that goes hand in hand with war is subject to change. And soon he will again give us

great chance."

At first glance, it was the usual boastful chatter about the "wonder weapon", repeated in recent months in every way by Hitler's propaganda. However, in London, Goebbels' statement unexpectedly caused alarm: this time the Nazi minister spoke of the enemy's new weapons "in all areas of the war"! Even if this was an exaggeration, it still had to be taken seriously in order to foresee the possibility that the Nazis might introduce some unpleasant novelties in the field of armaments.

On the personal instructions of Churchill, members of the Scientific and Technical Intelligence Committee were urgently assembled, which included such prominent scientists as Professor of Ballistics Jones, the closest adviser to the British Prime Minister, Professor of Physics Lindeman, a well-known expert on military equipment, Sir Arthur Ellis, high-ranking military men. The opinions of the members of the committee were divided. Some believed that the statement that made the noise was just another bluff. Others, on the contrary, argued that the Nazis were preparing some kind of surprises.

Indeed, there seemed to be good reason for the second point of view. It was far from the first time that threats were heard from Berlin to use the "terrible weapon of retaliation." And what? On June 16, 1944, the first V-1 projectile was launched on London, after which hundreds of these flying bombs, each filled with a ton of explosives, hit England every day.

> Allied soldiers! - the Nazis wrote in leaflets, with which they literally bombarded the British and American troops that landed in France. - You fell into a trap ... You are fighting on a narrow strip of land, the area of \u200b\u200bwhich was previously established by us. Meanwhile, our robot planes are wreaking havoc in the cities and harbors from which you obtain ammunition, food and supplies. Your communications have been cut…”

“Now it can no longer be considered bragging by the statement of the competent German authorities that the use of ... new German weapons was only the beginning, one should reckon with the upcoming expansion of their use,” scientific observers argued in the press. Their predictions came true: on September 7, a V-2 rocket was used against England.

The reflection of the Nazi missile attack required considerable efforts from the British. Under the Cabinet of Ministers, a special committee was urgently created to coordinate air defense, headed by Churchill's son-in-law, Lieutenant Colonel Sandys. The committee was subordinated to the commander of fighter aircraft, Marshal Hill, head of the network

barrage balloons, Vice-Marshal Gell and the commander of anti-aircraft artillery, General Pyle. Just to cover London, 1,800 guns and 2,000 balloons were concentrated in a small area of territory between the city and the coast. Almost around the clock, pilots and anti-aircraft gunners fought exhausting battles, shooting down projectiles. But if against V-1s flying slowly and at low altitude, these measures proved effective, then, as General Pyle later admitted, Great Britain did not have satisfactory anti-missile defenses to combat V-2s until the end of the war. As a result, Hitler's shells and rockets killed and wounded about 35,000 Englishmen and destroyed a huge number of buildings.

Alas, all this was calculated only after the war. But then, in the autumn of 1944, British intelligence officers, scientists and specialists were worried about one question: are there any new types of weapons in the arsenal of the Nazi command? Then it was not possible to find out. After the capitulation of Germany, secret materials from Nazi research institutes, military centers and various firms fell into the hands of the Allies. For many years they were kept with seven seals in the relevant institutions in the United States and England. It was then that a myth was born in the Western press that Hitler's Germany allegedly had all kinds of super-fantastic weapons in their destructive power, and if she had used them in time, World War II would have been won by her. “The Germans had hundreds of projects for secret types of weapons,” writes the American Bert, “which our experts were amazed to see when they studied the Nazi archives after the war.” And only the lack of coherence and coordination between the three branches of the armed forces, in his opinion, prevented the emergence of new weapons on the battlefields.

It sounds, no doubt, quite mysterious and, perhaps, to some extent fascinating. Still, in top-secret laboratories, at test sites hidden in mountains and forests, some unknown geniuses are developing and testing something that the world does not even suspect. Maybe tomorrow, well, in a month or two, this mysterious something will be thrown into battle and ... But the reality turned out to be much more modest and prosaic. Although at first it seemed that this was not so at all ...

The fact that Adolf Hitler listened attentively to the predictions of the priests and soothsayers around him was no secret to the Fuhrer's biographers. And how did Hitler feel about aliens and space in general? Was he thinking of retreating... into the depths of the universe? It would seem that the question is from the category of absurd. However, the information (or “ducks”?) that have recently appeared in various publications of the world makes us think about this issue as well. A couple of

years ago, the American weekly "Journal" published an article "Hitler's Cosmonauts", which stated that Germany of the Third Reich was far ahead of its main opponents - the USSR and the USA - in the field of space technology. This was confirmed by the fact that, according to rumors, three astronauts recently returned to Earth ... after a 47-year absence. The Journal, referring to a NASA expert who wished to remain anonymous, reported that the returnees did not age at all during this time, as they were in prolonged suspended animation.

Their rocket was built in Nazi Germany during World War II. Its crew consisted of three young pilots carefully selected on the personal order of Adolf Hitler. On the eve of their space launch from a secret base in Peenemünde, in northern Germany, they received a personal telegram from Hitler in which the Führer thanked the brave trio, who were ready to sacrifice themselves in the name of the interests of the nation. They keep this telegram to this day.

So far, NASA, judging by the publication in the Journal, is silent on the details and does not disclose the names of the astronauts. It is only known that they splashed down on April 2, 1990 on the surface of the Atlantic Ocean. Their spacecraft, according to preliminary data, was launched in 1943. In fact, it represented an improved modification of the famous V-2 rocket. You can, of

course, consider such a publication an April Fool's joke (pay attention to the date of splashdown of the astronauts). However, in every joke, as you know, there is

share of truth. How big is it in this case? It turned out that

the sensation was supported by a resident of the former GDR, who served during the war in the Luftwaffe. After the reunification of Germany, he announced that he was the first cosmonaut on the planet, since back in 1943 he flew into space on a rocket! And he added: when many years ago he made a similar statement to the authorities of the GDR, he landed in a psychiatric hospital. The latter, however, did not add much

credibility to this story in Germany either. However, it is not necessary to brush aside everything he said cleanly. Here's what the facts say...

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As already noted, the German land army, or rather, specialists from the ballistics and ammunition department of the army weapons department, led by Becker, thought a lot about solid-fuel rockets, which gave the Wehrmacht certain benefits. In particular, they did not need artillery pieces forbidden to Germany by the Versailles Treaty of 1919. And liquid rockets gave, at least in theory, the ability to shoot further than artillery did. Therefore, in 1929, a decision, historical in its kind, was made: to the department

ballistics was given responsibility for the development of missiles.

Hand on heart, it is worth recognizing that the task assigned to the department was almost impossible. Not a single technical institute in Germany was engaged in the creation of rockets. The only known experiment involving a rocket was carried out by Hermann Oberth during the filming of a movie. Nevertheless, an

order is an order, and it had to be carried out. And an employee of the ballistics department, Captain Gorstig, who was in charge of organizational issues, began to look for someone who could take up the production of missiles. In

1930, another man was assigned to assist him, a professional officer who had served in the heavy artillery during the First World War and had just returned from a long leave he was taking to complete his technical education and receive a doctorate in engineering. It was this man - Captain Walter Dornberger - who helped find the first "crazy" rocket man. He persuaded Dr. Heilandt to develop a small liquid propellant rocket engine that could be used to test various fuel mixtures. However, in fairness, we note that Heilandt did not start from scratch - in the 1920s in Germany there was a group of people who called themselves the "Society for

Interplanetary Communications" or the "German Rocket Society". It included Max Valier, Hermann Oberth, Friedrich Sander and other enthusiasts. This society was formed at about the same time as the famous GIRD (Jet Propulsion Study Group) in our country. Similar ideas were in the air, Friedrich Zander, coming to work, also urged his colleagues to rush somewhere to Mars, like his German colleagues.

The work was carried out almost in parallel until the end of the 1930s. But then the following happened. If in our country the RNII, the heir to GIRD, was practically destroyed during the years of repression, many of its employees were shot or ended up in camps, in Germany the attitude towards such developments and their authors turned out to be completely different.

Having secured the first rocket man, Dornberger soon realized that the arms department would somehow have to take on the brunt of financing and organizing experimental work, for which it would be necessary to build its own test benches. This idea was approved, and soon a new test station "Kummersdorf - West" was created at an artillery range 27 kilometers from Berlin. Colonel Dornberger was now appointed its head.

The first civilian employee of the station was Wernher von Braun, the second was the capable and talented mechanic Heinrich Grunow. In November 1932 they were joined by Walter Riedel, who worked for Dr. Heilandt's firm. And a little later, his chief engineer Pitch moved here from Heilandt, who proposed a project to the arms department

rocket engine on alcohol and liquid oxygen. This engine was supposed to provide 60 seconds of thrust of the order of 295 kilograms. Pitch received an advance on the purchase of materials and labor and ... disappeared. However, his assistant Arthur Rudolf reported that he was the true inventor of the engine, and proved this by completing the work in progress. The construction of the first

test bench was thus completed in December 1932. And an engine was immediately installed on it, which immediately exploded ... This was the first failure, but by no means the last. A frustrating year of hard work followed: rocket engines burned out at critical points; the flame went in the opposite direction and ignited the fuel injectors; different units and parts broke down every now and then ... But between these failures, there were also successful test runs, which showed that the engine could still be made to work. Finally, in 1933, research reached such a level that one might already think

about the design of the rocket itself. Conventionally, it was named Unit No. 1, or A-1.

Dornberger believed that a rocket in flight should be stabilized by rotation like an artillery shell - his past training had an effect. Therefore, it was decided to create a rocket with a rotating warhead and non-rotating tanks. This scheme resembled a design that had been tried 60 years earlier in a marine torpedo. According to the project, the launch weight of the A-1 rocket was 150

kilograms. Accordingly, the engine was also developed, but in the process of fine-tuning it and working on the aerodynamic shape of the rocket, it turned out that the thrust could be increased to 1000 kilograms. For such an engine, of course, a new rocket with more capacious tanks was also needed. And this meant that a new test bench was also needed, since the old one was too small ...

And yet, by December 1934, two new A-2 rockets were manufactured, jokingly named "Max" and "Moritz" (after the nicknames of two carpet clowns popular at that time). Both of them were transported to the island of Borkum in the North Sea and launched shortly before the Christmas holidays. And wow - both one and the other rockets rose to a height of 2000 meters, and for the flight there was enough thrust and an old 300-kilogram engine. The next missile was named A-3.

For its testing, the territory of the test site in Kummersdorf was already clearly insufficient. It was necessary to find a more spacious and secluded place. And then von Braun remembered how he once hunted ducks in the region of the island of Usedom in the Baltic, which is located near the mouth of the Peene River. The place was called Peenemünde. We decided to move there.

By that time, a new engine with a thrust of 1500 kilograms had already been designed, built, tested and finally finalized. In March 1936, General Fritsch came to Kummersdorf with an inspection. Having seen with his own eyes the work of the experimental station, he allocated new appropriations. Then the Ministry of Aviation somehow intervened in this matter - Hermann Goering cared about everything that at least somehow flew. And in April 1936, General Kesselring held a meeting, which resulted in the decision to create a new test station - so to speak, on shares - in the vicinity of the city of Wolgast. This enterprise was called the army experimental station "Penemünde", but in fact its equal owners were the land army and the air force. The army was given a wooded part of the island east of Lake Kölpin, it was called "Penemünde-East"; representatives of the Air Force chose a flat area to the north of the lake, where it was possible to build an airfield, this part was called "Penemünde - West".

While the research center at Peenemünde was being built, work on the A-3 missiles was also nearing completion. They had to be ready for launch by the autumn or winter of 1937. A starting position was needed, and Dornberger decided that the island of Greyfewalderoye would be the most suitable place.

The A-3 rocket had a height of 6.5 meters and a diameter of 70 centimeters. Her bow was filled with batteries; below them was a compartment with instruments, which included a barograph and a thermograph with a miniature automatic movie camera that photographed their readings in flight. There was also an emergency fuel cut-off device that operated from

using a radio signal. Below the instrument compartment was an oxygen tank, inside which was placed a smaller tank of liquid nitrogen. Then came the parachute compartment, then the fuel tank, and finally the rocket engine. Four tail stabilizer feathers were attached with their lower ends to a plastic ring with a diameter of 254 mm. The total launch weight of the rocket was 750 kilograms. It was equipped with a propulsion system with a

thrust of 1500 kilograms - the same one, the development of which began in Kummersdorf, and ended already in Peenemünde. Like the A-2 rocket, the engine ran on liquid oxygen and alcohol.

Test launches of three A-3 missiles were carried out in the autumn of 1937. Although the propulsion system worked as expected, the guidance system in all three launches did not live up to the hopes placed on it.

The reasons for these failures were not entirely clear, since the system worked well during laboratory and bench fire tests. In order to avoid new failures, it was decided to develop new flight simulation methods that would allow us to investigate the effect of all external parameters that affect the rocket, including aerodynamic drag and wind force.

A test on a new simulator showed that the gas rudders of the A-3 rocket were too small, the response of the servo system to the control signal was too slow, and the flight conditions sensors themselves were very imperfect. I had to redo everything again.

The creation of gas rudders has a long history. It has long been clear to many rocket scientists that aerodynamic rudders installed in the air stream cannot solve the problem of controlling the direction of the rocket along its entire trajectory. The air density is sufficient for the operation of aerodynamic control surfaces only at an altitude of no more than 16 kilometers. And since it was assumed that the rockets would leave the dense layers of the atmosphere, it was necessary to come up with a different flight control system.

For vertical lift, one could agree to install the engine at the head of the rocket. The principle of "nose thrust" was used by Goddard in his first rockets; Oberth wanted to do the same in a rocket for the Ufa-Film company. This principle was also known at Raketenflug Platz. Of course, the rocket had to fly in the direction of the thrust of the engine. However, no one could guarantee that the thrust of the engine would be in any case directed vertically. In the densest layers of the atmosphere, the forces

acting on the body of the rocket and the stabilizers tend to keep the rocket upright, but it was difficult to say how the case above is. Nevertheless, it was known that if the air stream is extremely unstable and changeable both in speed and in direction, then the jet of outflowing gases is very constant. This led to the idea that the control surfaces could be installed in the jet of effluent gases.

This was first proposed by Tsiolkovsky. Later, in his work, this problem was considered in great detail by Oberth. He especially emphasized that the "gas rudders" should act by compressing this jet with their flat surfaces. In 1935, Goddard put such rudders into practice.

Already at the time when the A-3 rocket was in the design stage (summer 1936), von Braun and Walter Riedel decided to create an even larger rocket, which later became known as the A-4 rocket. They were joined by Dornberger, who had his own thoughts on this matter. Since he served in the heavy artillery during the First World War, he, of course, could not have been unaware of the existence of an ultra-long-range gun, officially called the "Kaiser Wilhelm Geschütz", but more commonly known by the nickname "Big Bertha", or as it was called British, "Paris Cannon". It was she who led Dornberger to the idea of the need to create a powerful long-range missile.

It was assumed that the missile would have a firing range twice that of the Big Bertha, and the warhead would weigh a whole ton. The intended flight range of 260 kilometers meant that the rocket should have a maximum speed of about 1600 meters per second. The weight of the warhead determined the dry weight of the rocket, and it should have been approximately equal to 3 tons. To achieve the required maximum speed, it was necessary that

the weight of the propellant was twice the dry weight of the rocket. Thus, the launch weight of the rocket had to be increased to 12 tons, and this, in turn, meant that the thrust of the rocket engine should be approximately 25 tons.

According to these data, however, it would be possible to design a large number of different missiles. Some could be very long and thin, others short and thick. Therefore, some considerations were needed to determine the dimensions of the rocket. The new rocket was supposed to be a weapon that could be pulled up, if not close to the front line, then at least somewhere close to it. In addition, she had to meet the requirements associated with her transportation over long distances by road or rail. The maximum allowable dimensions were dictated by the width of the tunnels and the curvature of the railroad tracks.

Thus, the characteristics of the A-4 rocket were determined and, in a first approximation, justified even before the A-3 rocket was completed, which, as you know, did not justify the hopes placed on it. Therefore, before moving forward, it was necessary to bring the A-3 rocket to an acceptable level. In practice, even while maintaining the same dimensions, it was necessary to create a new rocket. She received the designation A-5.

The A-5 rocket featured the first version of the A-3 rocket engine, with large graphite gas fins and an improved airframe that was given nearly the same aerodynamic shape as the later A-4 rocket. And most importantly, the rocket was equipped with a fundamentally new control system. In fact, as many as three control systems of various

modifications were created for her, and all of them worked successfully. Nevertheless, the first A-5 rocket, launched in the autumn of 1938, for some reason did not have a control system at all - apparently, the rocket men wanted to report to the authorities at least such a launch. And only a year later, when the war with Poland was already underway, the A-5 rocket took off with full equipment and flawlessly rose to a height of 12 kilometers. A total of 25 launches of A-5 missiles were made;

first they were launched vertically, and then along an inclined trajectory. All rockets had two parachutes: an exhaust

one, which could open even at transonic speeds, and the main one, which extended 10 seconds after the first. The domes reduced the fall speed to about 14 meters per second.

The A-5 missiles, like the A-3 missiles, were launched from the island of Greifswalder-oye. The system for returning rockets to the ground with the help of parachutes worked quite reliably, so many rockets could be launched several times.

An interesting detail: in one of the protocols of interrogation of Peenemünde employees by the Allied intelligence service, it is said that the engine of the A-5 rocket did not work on fuel combustion, but generated gases due to the decomposition of concentrated hydrogen peroxide. This is not true. The error is probably due to this.

Due to the backlog in the development of the control mechanism and tail stabilizers, Professor Helmut Walter was entrusted with solving this problem. Several smaller models of the A-5 rocket, 20 centimeters in diameter, 160 centimeters long and weighing 27 kilograms, were manufactured at the Kiel plant. In the tanks of such models there were 20 kilograms of hydrogen peroxide, which created a thrust of about 120 kilograms for 15 seconds. Models were used to test tail fins of various shapes. These models were taken during interrogation for full-size A-5 missiles.

However, hydrogen peroxide has long attracted the attention of some rocket experimenters as a possible substitute for liquid oxygen. But things did not go further than proposals, since it was almost impossible to purchase ready-made hydrogen peroxide of the proper concentration. Only a few factories could produce a 30% solution, but even this was completely useless as a substitute for oxygen.

Every line drawn and every movement of the slide rule at Peenemünde had a direct or indirect bearing on the "big rocket," the same rocket that rather prematurely was called the A-4. It was she who later became known as the V-2 rocket, which the Allies, or at least European newspapers published on

English, called "Hitler's rocket".

In fact, the Fuhrer was not even interested in her. For all the time he only once saw how rockets were being developed, when in March 1939 he visited Kummersdorf. He was shown diagrams and drawings, and Colonel Dornberger reported on the work of the station. Dr. von Braun gave a technical lecture, after which Hitler was invited to a test site and shown a variety of missiles. Some of them have even been launched.

During the explanation, Hitler was silent, much to the surprise of the station staff, who knew that usually when a new gun or tank was shown, he spent several hours near them, asking questions about the smallest details.

After lunch, Hitler left, dryly thanking the hosts for the show. The rocket specialists had to console themselves with the fact that General Brauchitsch, who was in Hitler's retinue, expressed his satisfaction to them. Göring, who made a similar visit to Kummersdorf a week later, was so fascinated by rockets that he advised building rocket engines for airplanes, airships, ocean liners, trains, and cars, completely ignoring their theoretical and technical feasibility.

It was another four years after these visits before development of the A-4 rocket came to an end. The rockets were made in the summer of 1942. It should be noted that the first seven A-4 missiles were almost a whole ton heavier than the A-4 missiles put into mass production.
later.

The rocket consisted of four compartments. The nose was a warhead weighing about 1 ton, made of mild steel 6 mm thick and filled with amatol. The choice of this explosive was due to its low sensitivity to heat and shock. Below the combat head was an instrument compartment, in which, along with the equipment, several steel cylinders with compressed nitrogen were placed, which was used mainly to increase the pressure in the fuel tank. Below the instrument was the fuel compartment - the most voluminous and heaviest part of the rocket. When fully refueled, the fuel bay accounted for three-quarters of the rocket's weight. The tank with alcohol was placed at the top; from it, a pipeline passed through the center of the oxygen tank, supplying fuel to the combustion chamber.

The space between the fuel tanks and the outer shell of the rocket, as well as the cavities between both tanks, were filled with fiberglass. The rocket was filled with liquid oxygen just before launch, since the loss of oxygen due to evaporation was 2 kilograms per minute. Therefore, even a 20-minute interval between refueling and start-up led to the loss of about 40 kilograms of liquid oxygen. This was (and is) considered acceptable, but a longer delay requires refilling the oxygen tank.

The most important novelty in this rocket was the presence of a turbopump unit for supplying propellant components. In small rockets, the problem of supplying liquid propellants to the rocket engine was solved by pressurizing the tanks. The required pressure in this case was slightly more than 21 atmospheres. In a large rocket, such a system is almost impossible. The fuel supply can be performed in it only by special pumps.

Like gas rudders in a jet of exhaust gases, the fuel pump for rockets was theoretically not new. The need for pumps has been around for a long time. So, Goddard declared his need in one of his first patents; Obert also constantly turned to the problem of fuel pumps, but it seemed almost impossible to build such a pump - after all, it had to perform many functions at once: supply fuel components, one of which was liquefied gas, under a pressure of about 21 atmospheres and pump more than 190 liters of fuel per second . In addition, it had to be quite simple in design and very light, and to top it off, the pump had to run at full power for a very short (6 seconds) period of time. The only relief was that the pumping system had to run for little more than 1 minute.

When von Braun presented these demands to the personnel of the pump factory, he involuntarily expected objections that such demands could not be met. Instead, everyone listened in silence, as the required design turned out to resemble a type of fire pump. The existing samples of centrifugal fire pumps were the basis for the design of rocket fuel pumps.

But, of course, any pump needs a source of energy, that is, it must be driven by something. For this, concentrated hydrogen peroxide and a solution of permanganate were used, by combining which it was possible to quickly obtain a certain amount of steam-gas at a constant temperature. The turbopump unit, the steam generator for the turbine and two small tanks for hydrogen peroxide and potassium permanganate were placed in the same compartment with the propulsion system.

The spent steam gas, having passed through the turbine, was still hot and could do additional work. Therefore, it was sent to a heat exchanger, where it heated some liquid oxygen. Returning to the tank, this oxygen created a slight boost there, which somewhat facilitated the work of the turbopump unit and at the same time prevented the tank walls from flattening when it became empty. The same work in the fuel supply line was performed by compressed nitrogen. From the turbopump unit, both liquid fuel components were

supplied under pressure to the engine. Oxygen was supplied directly to 18 nozzles located in the engine head. Alcohol, before getting to the nozzles, passed through the cooling jacket

engine.

The most difficult problem in the development of a rocket engine was the creation of a critical part of the jet nozzle. If a rocket engine burned out, it almost invariably happened at the critical part of the nozzle. The Peenemünde-Vostok station also encountered this difficulty more than once, but the way out of this situation turned out to be surprisingly simple. Everything consisted in creating a layer of relatively cold alcohol vapor between the hot jet of outflowing gases and the nozzle wall by injecting alcohol through special holes in the critical part. This method is called film cooling. The A-4 rocket engine had four rows of such holes in the nozzle wall; the first row was

located slightly above the critical section, and the rest - below. The ignition of the cooling alcohol film was prevented by the absence of oxygen in this place. The alcohol film ignited only when it exited the nozzle into the open air. Therefore, the torch of the A-4 rocket engine had a length of about 15 meters. If the engine could run without film cooling, the length of its flame would probably be only 6 meters or even less. For launch, the A-4 rocket was installed on the launch pad, which was a massive steel ring mounted on four racks. The ring had to have a strictly horizontal position so that the rocket stood on the table in a

vertical position. Below the steel ring along the axis of the rocket was a deflector (reflector) of the jet stream, which was a pyramid of sheet steel that broke the gas jet of the rocket engine at the time of launch. To increase the survivability of the deflector, it was filled with water, which absorbed part of the heat.

The rocket was refueled after it was installed on the launch pad. All this time, the electrical equipment of the rocket worked from an external power source, the current from which was supplied through a cable to an explosive plug, held in a special socket on the rocket body using an electromagnet. The plug with the cable was disconnected from the rocket at the time of launch. Ignition in the rocket engine was carried out using a simple pyrotechnic device rotating in a horizontal plane inside the combustion chamber. Because of the cruciform shape, it was called the "flammable cross". When the engine started to work, this "cross" was burned by a stream of outflowing gases.

The launch of the A-4 rocket was carried out in three stages. First, a pyrotechnic device was ignited; when it burned out, the valves opened. Alcohol and oxygen at first entered the combustion chamber only under the influence of gravity, since the tanks were placed above the engine. The Germans called this stage the "small" or "preliminary" launch stage.

In the "pre" stage, the engine was running with the typical deafening noise, similar to that of a waterfall; the flame, broken by the pyramidal deflector, was scattered in all directions for many meters. The thrust was about 7 tons, and this, of course, was not enough to lift a rocket that weighed almost twice as much. But the purpose of the "preliminary" stage was not the actual launch of the rocket, but the demonstration that

the engine is running normally.

If the engine worked without interruption, the steam-gas generator immediately turned on and the turbopump unit began to work, creating the necessary pressure to supply fuel components to the combustion chamber. It took about three seconds to raise this pressure to a level that ensures the transition to the "main launch stage". At this time, the flame escaping from the engine nozzle increased sharply, the noise increased, and the thrust rose from 7 to 27 tons, forcing the rocket off the ground. The rocket's

rise was slow at first; during the first second it traveled a distance less than its own length. At the end of each subsequent second, the rocket was moving 10.7 meters per second faster than at the end of the previous one. Since the rocket was losing 127

kilograms of its weight every second due to fuel consumption, its acceleration progressively increased, which was greatly facilitated by the increase in the rate of exhaust of combustion products due to the drop in atmospheric pressure with altitude. At an altitude of more than 16 kilometers, this factor alone provided additional thrust of the order of 4.5 grams. When the fuel tanks were almost empty, the speed increased every second by almost 46 meters per second.

The first seconds of the flight were considered the most critical period, when the speed was still low and the rocket turned out to be very unstable. At this time, the task of balancing the rocket was performed by gas rudders. Then, when the speed of the rocket increased, the aerodynamic stabilizers helped the gas rudders, but then the rocket rose to such heights where the surrounding air was too rarefied, and therefore the task of stabilizing the rocket again fell on the gas rudders. When launched vertically, the gas rudders were only supposed to align the rocket and keep it in a vertical position, but when launched at a target, the rocket had to be tilted in the right direction on the active part of the trajectory.

In the latter case, the rocket remained in a strictly vertical position only for the first four seconds, then it tilted. The rocket overcame the sound barrier 25 seconds after launch, even during the launch of the rocket to a given trajectory. This period ended at the 54th second. Over the next 8-10 seconds, the rocket continued to move along the ascending branch of an inclined and rectilinear trajectory.

By the summer of 1942, when the first small series of A-4 missiles was almost completely ready for flight tests, the Peenemünde station was already a very large enterprise, so large that the Peenemünde-Vostok had to be divided into two sections. One section, in the area of Lake Kölpin, was named Peenemünde-North. She was directly involved in the development of missiles. The other, halfway between the Peenemünde-North section and the village of Karlshagen, was known as the production and experimental workshops of the Peenemünde-East station. The site of the test station of the German Air Force retained its name "Penemünde - West".

Peenemünde grew, but not without difficulty. The "acute attack of generosity" after September 1939 did not last long. Less than a year later, Hitler ordered Peenemünde to be struck off the list of objects of special importance. So, as you can see, it is not really necessary to consider rockets as "Hitler's weapons". They would never have taken off from the Peenemünde training ground at all if Dornberger had not gone to Berlin and had Field Marshal Brauchitsch give the order to send 400 qualified craftsmen to the rocket men and equate their stay there with service in the army. On June 13, 1942, the real

launch of the A-4 finally took place. After a thorough check of the rocket and its engine, the command “Attention! Fuse! First stage!" and a little later - "Main step!" With a terrible roar, the A-4 rocket took to the air for the first time. However, she was poorly stabilized; immediately having

received a roll, the rocket began to make strange oscillatory movements. For some time its noise was heard above the clouds, then there was silence, and after that, a falling rocket fell out of the clouds, somersaulting. Falling into the sea, she exploded and sank. The second rocket was launched on 16 August. At first

everything was going well, but then it broke away
nasal cone.

The failures with the first two A-4 missiles forced engineers and scientists to develop and conduct a series of various tests before launching the third rocket.

Its test took place on October 3, 1942. The day was clear. Launch time is noon. Observers could see how a huge cloud of dust and sand rose into the air in the distance, from which a rocket burst out in a moment and, after flying vertically upwards for 4.5 seconds, switched to an inclined trajectory towards the northeast. The missile flew over the Baltic Sea

approximately parallel to the coastline at a safe distance from it. The voice from the loudspeaker measured the seconds after the start: "... eighteen, nineteen, twenty..."

At the 21st second, the rocket exceeded the speed of sound. It was clearly visible even to the naked eye against the blue sky. After the 40th second, a white contrail appeared behind the rocket, left by condensed water vapor. After a while, this trail became zigzag. This was due to the fact that at different heights, air currents move in different directions. From the ground, it seemed that this bizarre white trail was hanging motionless in the air, someone even came up with an apt name for it - “frozen lightning”. 58 seconds after launch, the fuel supply to the rocket engine was cut off.

radio signal. But due to inertia, the rocket rose even higher, up to about 48 kilometers.

Calculations and measurements in the wind tunnel prior to the launch indicated that when the rocket re-enters the dense layers of the atmosphere, the rocket skin can heat up to 600 ° C. Therefore, everyone was worried about the question, will the rocket withstand this heat load? But the signals continued to come from the rocket both at the 250th and at the 280th second. The fall occurred only at the 296th second after the launch, and, according to observations, the rocket fell into the sea intact. The range of its flight was 190 kilometers.

The next rocket worked worse - it flew only 146 kilometers. And in the next ten launches, various shortcomings were noted. The rocket with production number 12 (the tenth launch) covered a distance of almost 200 kilometers, but its trajectory was too flat. The fifteenth launch went well in terms of missile performance, but the missile somehow changed direction. About this time Professor Oberth arrived in Peenemünde. The story of how he

got there and left this place again is very long and complicated. It is described in detail in the work of Academician B. V. Raushenbakh "Hermann Oberth", included in the collection "Passion". Therefore, here we present only the main facts. After conducting the first experiments with rockets near Berlin, Oberth returned to his homeland, to the

Hungarian city of Medias, where almost nothing was heard about him. A few years later, in an interview he gave to a correspondent for the Swiss newspaper Neue Zürcher Zeitung, he announced that he was continuing his research in the field of rocket theory. In 1938, Oberth was invited to the Technical Institute in Vienna to work on rockets. Here he realized that the invitation to Vienna had

no other purpose than to isolate him from the world and prevent him from working in the interests of another country. However, after some time, the leadership of the German Air Force contracted Oberth for

work in Peenemünde, for which he had to take German citizenship.

When Oberth first entered the highly classified Peenemünde research station, the A-4 rocket was completed and was about to be put into mass production. After his first surprise at what he saw, Oberth declared that he would have done many things differently. But it was too late to change anything, since any major change would mean a completely new development. This apparently disappointed Oberth; he began to look for another object for the application of his strengths and abilities. After a short choice, he decided to focus on anti-aircraft missiles.

Years of experience told him that anti-aircraft missiles should run on solid fuel. However, the Peenemünde station was prepared exclusively for liquid fuel rockets. In this regard, Oberth's proposal was transferred to the well-known company Wazag, which dealt with solid fuels and was an exporter of explosives.

substances to all European countries.

After the war, Oberth was temporarily detained by the British and released after interrogation. Then he lived for some time in Italy and Switzerland, tried to settle in West Germany near Nuremberg and finally came to the USA in 1955 to become an employee of the Redstone Arsenal in Huntsville (Alabama). But we are getting ahead of

ourselves a little. Let us go back to the time Dornberger traveled to Berlin to inquire about the support Peenemünde expected to receive in response to the many lengthy reports and memos. The only results of his negotiations at the War Office were an order to continue development and an instruction to take back the aide-mémoires for their destruction.

The War Office could not provide Peenemünde with the required amount of materials: this issue had to be resolved with the Minister of Armaments, Albert Speer. Dornberger went to him, but Speer expressed only his regret: they say he can't help!

This happened in January 1943. And in February, Dornberger was asked to come to the Ministry of Munitions to the head of the financial department, Professor Gettlage. There he was told that Peenemünde was to be transformed into a private joint-stock company; all its shares would be temporarily owned by the state, and the management would be carried out by a large industrial firm.

When Dornberger objected, a spokesman for the Ministry of Armaments in Stettin made accusations of poor leadership and other shortcomings. Dornberger nevertheless managed to prove his case and triumphed for a while, although since then people began to appear in Peenemünde, openly declaring that they had come to check whether everything was going right. It was the technical bureau of the Nazi Party, hidden behind the backs of industrial firms, which intended to take this institution away from the army. So, as you can see,

not only in the highest Soviet circles was the “struggle under
carpet" - the Nazis also loved this kind of dignitary sport.

In March 1943, when the construction of the first facility for launching missiles from the French Channel coast was nearing completion, Speer, instigated by Dornberger, promised to report to Hitler once more about long-range missiles. The result was negative; Dornberger was told that the Führer had a dream that not a single A-4 rocket could reach England.

On May 26, 1943, Peenemünde was visited by a large group of members of the commission on long-range weapons. They came to see the demonstration of models and make a decision accordingly. The fact is that since 1942, the Peenemünde-West station has been developing another long-range weapon system called the Fieseler Fi-103, which was later given the name of the V-1 projectile.
(V-1).

Let us clarify that V is the initial letter of the German word "Vergeltung" (retribution). This designation was coined by Goebbels and had nothing to do with the nature of the weapon system. With his submission, the Fi-103 system began to be designated V-1 ("V-1"), A-4 - V-2 ("V-2"), and the designation V-3 ("V-3") was reserved for anti-aircraft missile "Schmetter-liig", which was not put into production.

The V-1 projectile was technically an exact copy of a naval torpedo. After launching such a projectile, he flew with the help of an autopilot at a given course and at a predetermined height. As far as the naval torpedo is a self-propelled, automatically controlled miniature submarine, so the V-1 projectile was an automatically controlled and carrying a high-explosive charge, an unmanned aircraft.

The V-1 had a fuselage 7.8 meters long, in the bow of which a warhead with 1000 kilograms of explosive was placed. Behind the warhead was a fuel tank with 80-octane gasoline. Then came two spherical steel cylinders of compressed air braided with wire to ensure the operation of the rudders and other mechanisms. The tail section was occupied by a simplified autopilot, which kept the projectile on a straight course and at a given altitude. The wingspan was 540 centimeters. most

an interesting novelty was a pulse jet engine mounted in the rear of the fuselage and similar to the barrel of an old-fashioned cannon.

This engine was invented by engineer Paul Schmidt, to whom the army
the directorate of armaments has been providing financial assistance for some time.

The V-1 was by no means the first rocket-propelled projectile. For the first time, a pulsating jet engine was invented in Russia in 1906 by engineer V.V. Karavodin, for which he was given the “privilege” for No. a jet of gases of considerable speed, formed as a result of the periodic combustion of combustible

mixtures."

The same idea was put forward in the United States during the First World War, when army aircraft designers, in collaboration with Sperry Gyroscope, built the Bug flying bomb. Its development continued after the end of the war and was discontinued for financial reasons only in 1925. "Bug" was equipped with an internal combustion engine and
screw.

Pulsating jet engines, manufactured by Argus, were steel pipes, open at the back and closed at the front with lamellar spring valves that opened under the pressure of an oncoming air flow. When the air, having opened the lattice valves, entered the pipe, an increased pressure was created here; at the same time, fuel was injected here; there was a flash, as a result of which the expanded gases acted on the valves, closing them, and creating a thrust impulse. After the products of combustion were ejected through the jet nozzle, a reduced pressure was created in the combustion chamber and the air opened the valves again; start a new engine cycle. Fuel consumption was 2.35 liters per kilometer. The tank held about 570 liters of gasoline.

A pulsating jet engine necessarily requires a preliminary acceleration to a speed of at least 240 kilometers per hour. For this, an inclined launcher with a pipe having a longitudinal groove was used. The piston moving in this tube was equipped with a protrusion, with which it engaged with the projectile during acceleration. This piston was set in motion due to the gases formed during the decomposition of hydrogen peroxide. As soon as the pulsating jet engine began to work, the speed of the projectile aircraft increased to 580 kilometers per hour. "V-1" had a clock mechanism, with the help of which "guidance" was carried out on the target; it worked, and the projectile dived down. So,

the Long Range Weapons Commission had to make a choice between these two systems. Both of them were two completely different types of weapons. For the

Fi-103 ("V-1") projectile, the atmosphere served both as an aerodynamic support and as a source of oxidizer (oxygen) necessary for fuel combustion. It was the so-called winged projectile, which differed from the aircraft

only in that it was unmanned. (Now such designs are called cruise missiles.)

The A-4 missile was a ballistic aircraft that flew along a trajectory similar to that of an artillery projectile. A winged projectile cost about 10 times cheaper than a ballistic one, but was easily shot down by anti-aircraft guns, missiles and fighter-interceptors.

Shells Fi-103 and A-4 had the following basic performance data. The weight of the combat head was almost the same; the situation was approximately the same with the range: it was assumed that both projectiles would have a range of about 320 kilometers. Later it turned out that the average range of the V-1 projectile was about 240 kilometers, while the average range of the V-2 rocket was 306 kilometers. However, the V-2 rocket needed unusual fuels, and the V-1 projectile ran on ordinary gasoline.

Before the commission began to discuss this issue, both types of projectiles were demonstrated to it in action. Two V-2 missiles successfully passed the test,

showing a range of 260 kilometers. One V-1 projectile took off but crashed after a short flight; the second one didn't work at all. Nevertheless, the commission decided to recommend

the development and production of both systems

provided that in combat conditions they will be used in interaction.

Two days later, Speer summoned Dornberger to Hitler for an audience, which took place on July 7, 1943, at his headquarters in Rastenburg (East Prussia). Hitler was shown a film about the launch of shells that took place on October 3, 1942, a model of a large bunker being built in Watten, as well as models of a rocket and its means of transportation: the Vidalwagen and the Meylerwagen. ("Vidalwagen" was a special vehicle for transporting missiles in a horizontal position; "Meylervagen" was a self-propelled carriage used to transport a V-2 rocket and transfer it from a horizontal to a vertical position.) After that, Hitler changed his initial mind and gave the order considered Peenemünde the most important object, but at the same time demanded that the rocket warhead weigh at least 10 tons.

Large differences of opinion were noted in deciding how

launch rockets: from a stationary installation (bunker) or from field positions.

Engineers supported the idea of launching rockets from long-term bunkers, which were supposed to be large underground workshops with hundreds of rockets lined up, with all the test equipment, spare parts, and even installations for the production of liquid oxygen.

Military experts, and especially Dornberger himself, took a different point of view. For them, a large stationary installation has always remained a target whose position will sooner or later become known, and any target, no matter how strong or protected, can be destroyed. Therefore, the military developed the theory of launching missiles with mobile batteries that change firing positions immediately after launch. It was these batteries that were later put into practice.

But Hitler wanted the launch to be carried out from bunkers, and even ordered the construction of several such structures with concrete floors up to 7 meters thick. However, practice has shown that bunkers are easily detected and destroyed by the enemy; the bunker at Watten was destroyed by air strike, and the bunker at Wiesern was never completed

due to Allied air raids.

It should be noted that British intelligence already in the spring of 1942 learned about the work in Peenemünde. The command of the British Air Force very often sent their reconnaissance aircraft to this area of the Baltic, but in order not to betray their intentions to the Germans, the British photographed the entire coast from Kiel to Rostock. After some time, British aircraft pilots reported that the Germans were quite reconciled to frequent flights over the area, and once one of the pilots even returned with a photograph, which showed what looked like a small plane on an inclined launcher. It was the first version of the V-1 projectile.

At the same time, stories of fishermen from the Swedish and Danish islands located in the southern part of the Baltic began to reach the Allies. Fishermen said they saw devices flying through the air at very high speeds and making strange rattling sounds as they flew. Somewhat later, American and British pilots reported on the intensive construction of strange

structures on the coast of the English Channel, resembling skis in shape; they all seemed to be oriented in the direction of London.

Late in the evening of August 17, 1943, the Germans learned about the concentration of large forces of British bomber aviation over the Baltic Sea. Their approach led to the assumption that the British decided to conduct a massive raid on Berlin, and therefore Berlin's air defense was raised on alarm. But over the island of Rügen, the British planes, instead of turning south towards Berlin, changed course to the southeast.

That night, Peenemünde was raided by more than 300 heavy bombers,

dropped more than 1,500 tons of high-explosive and a huge number of incendiary bombs.

The targets of the bombardment were test benches, production shops and a village on the island of Usedom. The Peenemünde-West test station was not bombed, the entire blow fell on the harbor area with a power plant and a plant for the production of liquid oxygen. Losses in people amounted to 735 people; among them were killed Dr. Walter Thiel, who led the development of engines, and chief engineer Walter. The structures also sustained significant damage. However, Peenemünde continued to work on

the V-1 and V-2 shells, bringing them closer to the day they were put into production. The production of V-2 rockets was carried out not only in Peenemünde, but also at an underground plant in Niedersachswerfen near Nordhausen, in the Harz mountains. After the mass production of

rockets began, the problem arose of training soldiers to handle them. Himmler was entrusted with the choice of a place for a training missile range. The choice fell on the Polish artillery range near Blizna, 30 kilometers south of Milek (Krakow Voivodeship). As a target area, it was decided to use the Pinsk swamps, located 320 kilometers northeast of Blizna. The fall of the missiles was observed from the point at which the missiles were aimed; it was assumed that, according to the scattering law, the rockets would fall close enough to this point, but would not hit it. Indeed, they usually fell at a distance of 1.6–5.0 kilometers from the observation point.

At first, the V-2 rockets behaved badly; many of them collapsed or exploded on the active part of the trajectory, and a good half fell apart just before falling on the target, at an altitude of about 1.5 kilometers. In this regard, von Braun began to draw up firing tables, this work turned into an independent research project, the purpose of which was to find weaknesses in the rocket.

It was found that when a rocket breaks up in flight, the fuel remaining in the tanks explodes, but it was not possible to determine whether this explosion was the direct cause of the rocket falling apart or was due to its destruction. At the insistence of von Braun, several rockets were launched with an increased amount of oxygen, which would ensure complete burnout of all the alcohol in the fuel tank. It turned out that the percentage of destruction of missiles in the air and after that remained unchanged; therefore, the explosion of fuel in the tank was not the cause of the missile's disintegration.

In the end, after densely filling the space between the tanks and the fiberglass skin and after strengthening the compartment adjacent to the warhead, the number of destroyed missiles was reduced to a minimum. Missile production could continue. The V-2 was not the only rocket launched in

Poland to shoot down the range tables. Another system tested there was the Rheinbote rocket, developed by Rheinmetall-Borsig. This rocket had a length of more than 11 meters and was a combination of three rockets with a starting rocket booster. Its launch was reminiscent of firing from an artillery gun, since the Meylervagen arrow was used as a launch guide. The accelerator and all three stages worked on solid fuel - diglycol dinitrate; each stage, with its head part, was

articulated with the open end of the tubular body of the previous stage. When the engine of the lower (first) stage stopped working, a special mixture of gunpowder and nitroglycerin ignited, which ignited a charge of black powder. The latter ignited the next stage, which at that moment was disconnected from the used first stage. The third stage of the Reinbote rocket had a length of about 4 meters and a diameter of 198 millimeters, it developed a speed of up to 1600 meters per second already 25.6 seconds after the start of

the entire system. However, the maximum range of the Rainboat missile remained relatively small - only 220 kilometers. However, for the technology of those years, this figure seemed surprising. However, the advantages of the rocket were significantly reduced by the fact that it carried a very small

combat charge. But one day this shortcoming turned into a virtue.

During one of the rocket launches in Poland, it must have caught on something with a stabilizer at launch and began to rise vertically. Those present, among whom was Dornerger, hid in the trenches, as it was to be feared that the rocket itself or its fragments would fall on them from above. In addition, the rocket carried a combat charge. The warhead did indeed fall to the ground, but the explosion was very weak. After searching, a shallow crater from an explosion with a diameter of no more than 1.2 meters was found. Despite this fact, the

Rhineboat rockets were used at the front at Hitler's insistence; In November 1944, 20 Reinbote missiles were fired from the Dutch town of Zwolle at Antwerp. However, in conditions when many other weapons were fired at Antwerp at the same time, the action of the Rhineboat missiles went almost unnoticed.

However, technical and military troubles were not the only ones complicating the lives of Peenemünde workers.

Early in the morning of March 15, 1944, General Buhle called Dornberger from Berchtesgaden (Hitler's residence). Dornberger was ordered to report immediately to Field Marshal Keitel in Berchtesgaden. When he arrived there, Boulet informed him that Dr. Wernher von Braun, as well as the engineers Klaus Riedel and Helmut Gröttrup, had been arrested by the Gestapo.

The next day, Keitel explained to Dornberger that those arrested were likely to be executed, as they were accused of sabotaging the development of the A-4 missile project. Their conversation was allegedly overheard that they were working on the A-4 rocket under duress, while interplanetary travel was their cherished goal. The real reason for the

arrest was that Himmler, during one of his visits to Peenemünde in 1943, took von Braun aside and offered him much better terms if he would facilitate the transfer of the A-4 rocket to the jurisdiction of the SS. Von Braun flatly refused, and so Himmler personally ordered his arrest.

A meeting at Keitel's led to a skirmish between Dornberger and SS General Müller. Those arrested were released thanks to Dornberger's sworn statement that these people were needed to complete work on the A-4 missile project.

Meanwhile, at the front, events developed as usual ...

The failure of "Robotblitz"

In early June 1944, a report was received in London that German guided missiles had been delivered to the French coast of the English Channel. English pilots reported that around two structures resembling skis, a lot of enemy activity was noticed. On the evening of June 12, German long-range guns began bombarding English territory across the English Channel, probably to divert British attention from preparing to launch projectile aircraft. The main object of the artillery raid was Maidstone, a settlement a few kilometers from the coast of the English Channel. Autumn and Folkestone were also fired on.

At 4:00 am, the shelling stopped. A few minutes later, a strange aircraft was seen over the observation post in Kent, making a sharp whistling sound and emitting a bright light from the tail. He did not dive for Kent, but continued flying over the Downs and fell to the ground with a deafening explosion at Swanscombe, near Gravesend, at 4 hours 18 minutes.

During the next hour, three more of these "planes" crashed at Cuckfield, Bethnal Green, and the Platt. These explosions in Bethnal Green killed six and injured nine people; in addition, the railway bridge was destroyed. This was the beginning of the

so-called "Robotblitz" - the war of mechanisms. However, as early as the

following month, the Allies were lucky enough to obtain several samples of both German V-weapon systems. All V-1 projectiles that did not explode during the fall were carefully studied by the British.

Acquaintance with the A-4 ("V-2") system helped the allies by chance. In June 1944, one of the rockets launched from Peenemünde deviated from the trajectory towards Sweden and disintegrated over Kalmar. The neutral Swedes were offended and protested to the Germans. Upon learning of this, the British asked the Swedes to give them this sample, and they complied with the request.

Then it turned out that this rocket was launched by the Germans for flight tests of a radio remote control system developed for the Wasserfall anti-aircraft guided missile. The system made it possible for the ground station operator to stabilize the rocket in flight in pitch and roll using the aircraft control sticks. This task was entrusted to one engineer, who until then had dealt with the remote control system only on testing simulators. When the rocket reached an altitude of 1800 meters, he lost sight of it, because the line of sight was blocked by cumulus clouds. In order to prevent the missile from falling on the coast south of the starting position, on its own territory, the operating engineer deliberately turned the missile in a northerly direction, and it went towards Sweden.

A group of specialist engineers from British intelligence brilliantly did an extremely difficult job of recreating the exact design of the V-2 and all its units from the wreckage. However, the fact that this rocket was equipped with a remote control system led them to the erroneous conclusion that all V-2 rockets were radio controlled.

Meanwhile, the Germans continued to bombard England with V-1 projectiles. The total number of these shells fired at London was 8070 pieces. Of this number, according to British data, 7488 projectiles were seen by the surveillance service, and 2420 reached their targets. British air defense fighter planes shot down 1847 V-1s, shooting them with their side weapons and ramming them with their wings; anti-aircraft artillery destroyed 1878 shells, 232 shells crashed against barrage balloons.

In total, almost 53 percent of all V-1 projectiles fired by
in London, and only 32 percent of the observed projectiles broke through to the targets.

But even with this number of projectiles, the Germans inflicted great damage on England; 24,491 residential buildings were destroyed, 52,293 buildings became uninhabitable. 5,864 people were killed, 17,197 were seriously injured, and 23,174 were slightly injured.

General data on the intercepted projectiles cannot give a complete picture of the scale of the struggle that unfolded against the German rockets. During the first period of the "Robotblitz", the British did not actually know how to defend themselves against this new weapon, and they did not have the appropriate organization. Anti-aircraft artillery and fighters had to act carefully against the projectiles so as not to interfere with each other. In the end, artillery was assigned the task of covering the outer defensive belt, and fighter aircraft - the inner one. Anti-aircraft guns were controlled by American devices POISOT type M-9. Before the deployment of artillery and aviation along the belts, the first shot down 261 projectiles, and the second - 925 shells; after the reorganization of the defense, artillery shot down 1199, and fighters - 847 projectiles.

The British divide the entire "Robotblitz" in time into three consecutive periods. In the first period, about half of the observed bombardments were shot down, during the second period - 63 percent, and in the third period - 73 percent. By September

1944, the V-2 missiles, organized into mobile batteries, were ready for combat use. Each rocket battery had three "meylervagen", transporting one V-2 rocket.

"Meylerwagens" moved with the help of a half-track tractor, which also served to transport the combat crew of the installation. The rockets were followed by three tank trucks: one with liquid oxygen for all three rockets, another with alcohol for three rockets, and a third with auxiliary fuel and other equipment. In addition, the battery had an electric current generator on a car and a mobile installation for testing the rocket and controlling fire. The officers of the battery were housed in staff buses.

After choosing a place for the starting position, the direction of fire was hung. Then all three rockets were installed on the launch pads so that the line of stabilizers 1 - III was located in the firing plane or parallel to it. It is interesting to note that for

the first time, V-2 rockets were fired not at London, but at Paris. On September 6, 1944, two V-2 rockets were launched in the direction of the French capital. One of them did not reach the city, the other exploded in the city, although this was not reported anywhere. The next two rockets were fired at London from a highway junction.

on the outskirts of the Dutch capital.

In the official English report, this first bombardment of London with V-2 rockets is described as follows. “At about 6:40 p.m. on September 8, 1944, Londoners returning home from work were greatly surprised by a sharp sound that looked very much like distant thunder. At 6:43 p.m., a rocket fell and exploded in Chiswick, killing three and seriously injuring about ten others. 16 seconds after the first, another rocket landed near Epping, destroying several wooden houses but causing no casualties." For the next ten days, the rockets continued to fall with an intensity of no more than

two missiles a day.

On September 17, the Allies launched an airborne operation in the lower reaches of the Rhine at Arnhem. As a result, the German High Command moved the missile units to the east, and from the next day, missile attacks on London temporarily ceased. During this period, 26 rockets were fired at England, and 13 of them fell inside the London defense area. Combat launches showed that the statements of German scientists that the V-2 missiles were not ready for mass production were correct. Two Dutch scientists, Prof. Jutenbogart

and Dr. Koo, compiled the following data on the number of rockets launched from The Hague and its suburbs, indicating the number of failed launches that were observed from the launch site area. Of the 948 missiles that seemed to be launched successfully, a significant number did not reach the London area, apparently because the launch of the missile on a ballistic trajectory was not carried out accurately enough; rockets rose vertically, went into the stratosphere and returned from there, far from reaching the target.

So, during one launch from Utrecht, the software mechanism for bringing the rocket to the trajectory failed at the very beginning of the ascent; the rocket gained a height of 162 kilometers and fell within the city. The German "rocket attack" on England ended

on March 27, 1945 at 4:45 pm, when a rocket from No. 1115 fell in the Orpington area, in Kent. In seven months, the Germans fired at least 1,300 missiles in the direction of London and about 40 missiles in Norwich. Of these, 518 fell within the London defense area, but none exploded within Norwich. In London, 2,511 people were killed by rockets and 5,869 people were seriously injured. In other areas, the losses amounted to 213 people killed and 598 seriously wounded. The last time V-2 combat missiles were used during the battle for Antwerp.

"Winged bombs" and other exotic

Other systems developed by the Germans during World War II were
anti-aircraft missiles. Two such projectiles were created in Peenemünde.

The Wasserfall projectile was a rocket similar to the V-2 rocket, but halved. Its distinguishing feature was that it had four short wings. Obviously, it was assumed that this rocket, after rising to a given height, should have turned around and attacked the bomber either in the forehead or in the tail. The development of the rocket was completed, but they did not have time to put it into mass production. Meanwhile, their design contained quite interesting technical solutions.

Since anti-aircraft missiles must remain fueled for a long time, and liquid oxygen is unsuitable for this, the Wasserfall rocket engine ran on a fuel mixture whose components were called "salbay" and

"visol".

"Salbay" was nitric acid used as an oxidizing agent. "Vizol" served as fuel; it belonged to the group of propellants with a vinyl base developed by the Germans. The basis of the fuels of the second group, conventionally called "tonka", were xylidines. The composition of the fuel mixture was indicated by numbers after the name; e.g. fuel

Tonka 250 was 50 percent xylidine and 50 percent triethylamine by weight. The Wasserfall rocket engine used vinyliso-butyl alcohol as fuel. Rocket "Wasserfall" consisted of the following parts. A radio fuse was placed in the

bow, which was triggered by a radio signal transmitted from the ground; it was later replaced by a remote fuse. Then came the combat head, filled with an explosive - amatol. The upper compartment with a diameter of 914 millimeters was a spherical cylinder with compressed air, which actuated the adjusting mechanisms - servomotors. Directly under this cylinder was placed a compartment with valves, and then a tank with a “visol”, a tank with a “salbay” and, finally, an engine compartment, in which the engine and auxiliary devices were located. Stabilizers and gas rudders were mounted on the engine compartment, and four wings were attached to the outer shell of the rocket at the level of the fuel tanks.

Post-war reports that the Wasserfall rocket was used in a combat situation were erroneous. The found protocols of 40 experimental launches indicate that only in 14 cases the missile launches were "quite successful". The second of the anti-aircraft

missiles developed at Peenemünde, the Typhoon, was a very interesting but incomplete attempt to create small liquid rockets for mass production, which would be as simple as the production of solid fuel rockets, and would allow them to be used in large numbers. . Its body, which was also a fuel tank, consisted of a seamless pipe with a length of 1970 millimeters and a diameter of almost 100 millimeters. The oxidizer tank was a thinner piece of pipe of shorter length, placed coaxially inside the fuel tank. The presence of such concentrically located tanks made it possible to significantly save on the weight of the rocket. The pressure in the inner tank, necessary to displace the fuel components into the combustion chamber, was compensated by pressure from the outside, which made it possible to make it thin-walled.

The pressure in the tanks was created by gases released during the combustion of a small cordite squib. The Typhoon rocket actually had no valves. When the charge of cordite burned out, the pressure in the tanks reached 50 atmospheres, but the fuel components did not begin to enter the combustion chamber immediately, but only after the safety membranes ruptured - metal discs designed for a pressure of no more than 5 atmospheres. These membranes were placed both between the squib and tanks, and between the tanks and nozzles of the combustion chamber.

When the fuel was already entering the combustion chamber, nitric acid (oxidizer) was still delayed by a special plug, the long rod of which had another plug at the other end, closing the nozzle neck. The flow of fuel, pressing on this plug, opened it, and nitric acid also began to flow into the combustion chamber; combustion reaction took place. When the rod burned through, the bottom plug was thrown out.

The Typhoon rocket took off with a very high acceleration (31 g), developing at the end of the first second a speed of more than 300 meters per second. Within about three seconds of engine operation, the rocket reached an altitude of about

15,000 meters. Two other German anti-aircraft shells, "Schmetterling" and "Entzian", structurally resembled aircraft. For take-off, both projectiles used solid-fuel rocket boosters, which, after the fuel burned out, were automatically reset.

The Entian projectile was of a combined wood-metal design, which misled Allied intelligence, which at first mistook captured samples of live ammunition for full-size wooden models.

The same mistake was made with regard to the first sample of the Reintochter rocket, developed by the Rheinmetall-Borsig company. Its design was somewhat strange: it had four small control planes located crosswise in the bow, and six large swept stabilizers in the tail. Four rocket nozzles were located between the stabilizers. The combat charge of the rocket was placed in a special casing, reinforced at the end of the cylinder of the main rocket engine. To ensure takeoff, the rocket had an accelerator with four stabilizers.

The designers provided that the rocket should be launched immediately after bomber detection by search radar.

* * *

As for the A-series missile projects, the list does not end with the A-5 system. A design for the A-6 rocket was developed, but no models were built; then came the A-7 missiles (the cruise version of the A-5 missile) and the A-9. The A-8 missile project remained on paper.

The idea of giving rockets load-bearing surfaces was based on increasing the range of the rocket when it returns to the dense layers of the atmosphere. The calculation was simple: with the help of wings, an empty and therefore relatively light rocket could be turned into a body that obeys the laws of aerodynamics, that is, into a kind of high-speed glider.

A preliminary analysis showed that the presence of short wings made it possible to increase the flight range by 160 kilometers, that is, for a rocket with V-2 characteristics, in general, the range was increased to 480 kilometers.

The A-9 rocket was supposed to run on fuel somewhat different from that used in the A-4 rocket, since the A-9 rocket was supposed to be accelerated using an A-10 launch vehicle with a launch weight of about 75 tons. This made the A-9 missile a "transatlantic" missile. “But the A-10 system was not built, and probably only two or three mock-ups were made according to the A-9 project,” notes the well-known historian of science Willie Ley in his study “Rockets and Space Flights”. “However, short wings were tried on the A-4 rocket, which led to the creation of the A-4v system.”

None of the above missiles were seriously used in the war. The only projectile that the Germans managed to use in a combat situation was the Hs-293, developed by the Henschel aviation company. It was a "winged bomb" 3.56 meters long and weighing more than 770 kilograms. The wingspan was 2.9 meters. A rocket engine was located in the tail section of the projectile body.

Hs-293 was used as a military weapon in late 1943 - early 1944 against Allied naval convoys. The launch was carried out from long-range bombers: "Dornier"
(Do-127), Heinkel (He-177), Junker (Ju-290) and Focke-Wulf (FW-200). Each such bomber could carry only one missile in addition to its normal bomb load.

When the bomber entered the visibility zone of the Allied convoy, the "wing bomb" was dropped and its rocket engine began to work. The pilot of the carrier aircraft controlled the flight of the rocket by radio. Such "wing bombs" sank a large number of Allied merchant ships. In the last period of the war, the German company

BMW created a rocket that had a number of interesting features. This air-to-air missile, tentatively designated X-4, had a cigar-shaped body about two meters long. The fuel components burned in the X-4 engine were the Salbay oxidizer and the Tonka-250 fuel.

One feature of the rocket was that both fuel tanks were long tubes coiled to fit the shape of the rocket body, with one of the coils placed inside the other. The X-4 missile had four small cruciform stabilizers in the tail section and four large cruciform wings, also installed approximately in the middle of the rocket body. At the ends of one pair of wings, tracers were strengthened, and at the ends of the other, streamlined gondolas, similar to external fuel tanks on the wings of a modern jet fighter, were strengthened.

Each gondola contained a coil with 6.5 kilometers of thin copper wire. When launched from a carrier aircraft, the X-4 rocket rushed forward at a speed twice that of the carrier aircraft, unwinding the wires along which, using electrical impulses, the pilot guided the rocket to the target.

A similar guidance system later, after the Second World War, was
used to target certain types of anti-tank missiles.

... The port of Swinemünde and the island of Usedom, together with Peenemünde, were occupied on May 5, 1945 by the troops of the 2nd Belorussian Front under the command of Marshal Rokossovsky. Samo

Peenemünde was stormed by the unit of Major Anatoly Vavilov, who was made responsible for the safety of the remaining equipment.

However, German designers and other personnel had evacuated to Bavaria a few weeks before the arrival of the Russians and were in no small alarm. The fact is that servants reached them about a secret order to destroy everyone who had something to do with rocket weapons. Its execution was entrusted to the SS and SA units. However, at that time, even in the apparatus of the secret police, confusion reigned and the order was never executed.

When it became clear that all the surrounding areas were occupied by American troops, Wernher von Braun's younger brother Magnus was sent to find any of the Americans to whom the personnel of the missile research center could surrender. At the

same time, American troops seized an underground rocket factory located near Niedersachswerfen, in territory that, according to the agreement, was to become a Russian zone of occupation. Of course, it was impossible to move the underground plant, but by the time the Allied officers began to carry out the necessary formalities related to the transfer of the plant to the Russians, about 300 freight cars loaded with equipment and parts of V-2 rockets were already on their way to Zapadnoe hemisphere. “The Peenemünde test site ceased operations in 1945, but the

rockets that once roared over the quiet Peene River continued to roar elsewhere - over the waters of the Rio Grande, already on the other side of the Atlantic,” American historian Willie Ley concludes his investigation. Well, what did the Soviet specialists do at that time? Realizing in the course of

hostilities that the capabilities of rocket technology are

by no means exhausted only by the creation of multiple launch rocket systems, our specialists, on instructions from above, rushed to catch up. S.P. Korolev and other designers who had once been related to the RNII were released from prison.

And so, specialists who were related to radio electronics, rocketry, nuclear physics as part of special teams were sent at the end of the war to the territory of defeated Germany to search for and export everything more or less valuable to the USSR.

Our well-known specialist in the field of rocket and space technology, later one of Korolev's closest associates, Boris Evseevich Chertok, also found himself on such a business trip. Here is how he described

his impressions of such a business trip.

> “It is significant that when, after the war, we began to reproduce the V-2 technique and develop our new rockets, we became convinced that such a device long ago invented by mankind as an electric multi-contact relay can only be made in our country by one Leningrad plant, Krasnaya Zarya. . In Germany, Telefunken alone had three such plants, and at least two by Siemens. This is one of the reasons why, despite the continuous bombardment to which the Allied aviation subjected German cities, the production of weapons did not fall, but increased continuously until the middle of 1944.

It would seem a trifle - a small relay - but how much depended on it ... What then talk about bigger things?

> “I arrived in Peenemünde on June 1,” said Chertok. – The wealth of measuring instrumentation that I collected in Berlin, and the need to deliver it to Moscow, did not allow us to see this legendary missile center immediately after the troops of the 2nd Belorussian Front entered there. But there is no evil without good. We managed to organize a special flight of our Boston B-25 from Berlin to Peenemünde, and my companion was Veniamin Smirnov, with whom we worked in Berlin in close cooperation. Well, what really
>
> interesting collisions suddenly gets up history! Soviet specialists in officer ranks are flying from Berlin in 1945, where only 20

days ago, an act of unconditional surrender of Nazi Germany was signed, they are flying on an American bomber, which is piloted by a pilot who tested the first Soviet BI-1 rocket plane.

I did not realize then that I was flying to that geographical place on the coast of the Baltic Sea, which in history is destined to be the launching pad for the start of the great rocket race of the 20th century. Dozens of peoples from all continents will be drawn into this race, and by the end of the century, almost all the armies of the world will acquire rocket weapons in one form or

another. Now no one is surprised by the correspondence from the fronts of small local wars that a “missile war” is going on. Even in numerous inter-ethnic skirmishes, it comes to firing rockets! I think I will not be mistaken in predicting that guided missiles at the beginning of the 21st century will be as accessible as Kalashnikov assault rifles.

But in those days, we still did not imagine the prospects for such a historical turn in weapons technology, and we were drawn to Peenemünde by a purely cognitive professional engineering curiosity and a sense of duty to our country. I was already prepared for what I might see by the stories of Isaev and Pallo, who had been there, who flew from Peenemünde to Berlin only a week ago and shared their impressions in detail. But when the plane, at our request, flew over the entire territory of the island, I was so delighted with everything I saw that now, after almost half a century, vast beaches, white lambs of the oncoming surf, wooded hills still appear in my memory. I did not want to take my eyes off the views of this wonderful natural reserve.

The landscape already contrasted very sharply with the ruins of Berlin familiar over the past month. But among the pines, the contours of buildings shine through, then huge iron structures of bridges set “on the butt”, some more incomprehensible from a height, but obviously industrial facilities. Everything is overlaid with a grid of roads, slightly covered by the shadows of pines, that connect everything. On the right, forests and the glare of lakes go into the distance, on the left - the gray sea. We flew past the official territory of the island, and again attractive white-and-cream, pink and all sorts of other multi-colored villas and hotels peep out of the coniferous greenery. In a word, resort.

From the air we saw no sign of the brutal bombardment that the British had reported to us. The airfield for receiving "Boston" was quite suitable. It is designed for landing high-speed bombers. We were already expected and taken immediately to the Shvabes Hotel. For everyone who shared

stories, the first impression from acquaintance with the surroundings of Peenemünde is by no means rocketry facilities, but the beauty of the nature of the Baltic coast. The elite of German rocket scientists lived and rested here. Now the best of the hotels - the Shvabes Hotel - houses the headquarters for the study of Peenemünde, headed by Major General Andrei Illarionovich Sokolov. General Sokolov during the war was the deputy commander of the guards mortar units, and while in Moscow they were looking for those who wanted to take patronage over German rocket technology, the Main Artillery Directorate instructed him to study and protect Peenemünde. We must give him his due: he organized this work well. There are practically no German competent

specialists left on the island of Usedom. General Sokolov's group brought together several uninformed specialists from local residents. With their help and the conjectures of Soviet engineers, a description of what Peenemünde was before the arrival of our army was compiled. It was, but is not. Allied aircraft damaged almost all buildings and laboratories. But they were not destroyed to the ground. The firing stands were larger than anything we could have imagined. Well-preserved bunkers were built near the stands, from

where they controlled and monitored the testing of engines and missiles. All buildings, which occupied a total of several tens of hectares, were connected by excellent roads. Dozens of kilometers of power, measuring and signal cables were laid in the cable channels, which the Germans did not have time to dismantle.

All equipment down to the last device and even machine tools at a large plant, the building of which was almost not damaged, was dismantled, taken out, and what they did not have time to evacuate before the appearance of the troops of Marshal Rokossovsky,

SS Sonderkommandos rendered unusable.

General Sokolov managed to largely restore the old order in the residential area of the Zinnowitz resort. I had already been prepared for this by Arvid Pallo, who warned me back in Berlin that Peenemünde had a good pre-war high-society resort. As if there was no war with its horrors. In the restaurant of the Shvabes Hotel, a common table was

served for the entire officer staff, covered with a snow-white tablecloth, and at each place there were numerous cutlery, in an amount that clearly exceeded the variety of dishes. Signature plates with a very modest snack were placed by dexterous waiters so that the brand of the hotel was positioned in front of your eyes in the right way.

None of the officers dared to sit at the common table until the general entered. Then the ceremonial began, familiar to us only from the movies. A line of waiters in black suits and white shirts with "butterflies" led by the head waiter solemnly marched around the table, starting with the general, and then moved through the ranks. At the same time, the first waiter poured soup, the second put potatoes, the third sprinkled everything with herbs, the fourth sprinkled with spicy gravy, and finally the fifth dripped thirty grams of alcohol into one of the many glasses. Alcohol was diluted with water to taste.

To some extent, this whole performance revived the order that took place in the Schwabes Hotel when eminent guests visited Peenemünde. According to the head waiter, almost all the first persons of the fascist Reich, except for Hitler himself, were here. “But, of course,” added the head waiter, “I then served excellent wines to the table. When Dornberger and von Braun evacuated Peenemünde, they took all their food and wine supplies with them.”

We were introduced to the general in the dining room and honorably withstood all the rules of etiquette laid down in "high society", despite the provocative smiles and remarks of the old-timers.

Noting the facts that struck him concerning the life of German rocket scientists, B. E. Chertok then moves from lyrics to action.

Inspection of Peenemünde in May-June 1945 by Soviet specialists showed that the actual scope of work on rocket technology in Germany far exceeded the ideas that we had. Neither we, nor the Americans, nor the British

until 1945 were able to create liquid rocket engines with a thrust of more than 1.5 tons. Yes, and those that were created had low reliability, they did not go into the series, and no new type of weapon with their use was ever created.

And by this time, the Germans had successfully developed and mastered the LRE with a thrust of up to 27 tons, in 18 seconds one more time! And besides, these engines were produced on an industrial scale.

And the automatic control system! It is one thing to show that in principle, theoretically for a given level of technology, it is possible to control the flight of a rocket and, accordingly, the engine mode in flight at a distance of 300 kilometers, but it is quite another thing to practically accomplish this task, bringing the entire system to a level suitable for adoption! In the period from 1937 to 1940, directly in

the construction of the center of Peenemünde was more than 550 million marks were invested - a huge amount at that time, Chertok notes.

The center was equipped with the latest measuring equipment and special testing equipment by all the leading electrical and radio engineering companies in Germany. It is necessary to pay tribute to the energy and confidence with which the work leaders acted, and, first of all, Dornberger and von Braun. Actually, it's not just the enthusiasm and organizational

skills of Peenemünde's leaders. They were well aware that the enthusiasm and brilliant abilities of single scientists are far from enough. It required a clear understanding of the scope of all work to achieve the goals set and the courage to create the strongest state scientific, technical, industrial and military testing infrastructure. All this

was conceived before, and refined and implemented already during the
war. In 1943, Peenemünde's core staff numbered over 15,000. New stands made it possible to carry out fire tests of engines for thrust from 100 kilograms to 100 tons. Peenemünd's aerodynamicists were
proud of the largest wind tunnel in Europe, created in just a year and a half, the largest plant for producing liquid oxygen, spacious and well-equipped design rooms.

From the very beginning of construction on the island of Usedom, launch sites for missiles and bunkers for launch control were provided. Accordingly, the entire route of possible launches in the north-north-east direction was equipped with means of monitoring and monitoring the missile.

However, one should not think that the "green light" was constantly open to the German rocket scientists. We already know about some facts of opposition to them by the SS and the Luftwaffe. Chertok also brings new
ones. For example, in 1940–1941, the problem of priorities was very acute in military programs for the creation of new types of weapons. The highest priority in Germany was the program of the Luftwaffe, concerning the organization of mass production of the medium bomber "Ju-88". The leadership of the Luftwaffe understood very well that the organization of large-scale production of the A-4 could interfere with the fulfillment of numerous orders in the industry for the Yu-88 program. The air force undoubtedly had a strong claim to the highest priority, since new bombers were sent directly to the front in active air units. Therefore, only at the very end of the war, when the A-4 program was called the "retribution" program ("Fergeltung"), and the rocket received the designation "V-2" (V-2), the new secret weapon was given priority among all orders in the industry. and in transport. Dornberger, von Braun and the leadership of the ground forces who supported them pushed the Yu-88 program into the background.

This significantly reduced the combat capabilities of German bomber aircraft. At a time when Anglo-American aviation was destroying German cities one after another, Germany was unable to strike back. There were not enough high-speed high-altitude bombers of the required range. All hopes now for such a strike were placed on the V-2 retaliation weapon - the A-4 devices.

Such a turn in favor of the Peenemünde programs at a time when Germany was already on the verge of a military catastrophe on the Eastern Front and lost the air battle for England can only be explained by the blind faith of Hitler and his inner circle in the miraculous power of the new rocket weapon as a means of mass destruction and a new means of air defense. It was faith, not certainty. This belief not only
hastened the defeat of Hitler, but to some extent contributed to the elimination of the terrible threat of the Germans creating an atomic bomb before the end of the war. The scale of work on the A-4 program and, in particular, its absorption of many extremely scarce materials during mass production indirectly prevented the Germans from creating an atomic bomb.

However, in the works carried out in Peenemünde on the widest scale, one after another, serious technical problems arose. At the end of 1941,
for the first time, bench firing complex tests of the A-4 rocket were carried out. During these tests, due to the inattention of the personnel, an explosion occurred, the rocket and the stand were destroyed. Only in
1942 did the first experimental launches begin. The first qualifying as a successful launch took place on October 3, 1942. It was the fourth A-4 rocket. She flew 192 kilometers and reached an altitude of 90 kilometers. Oberth himself, who was then in Peenemünde, congratulated von Braun and the other developers of the rocket. The engine and control system worked relatively well for the first time.

“On the occasion of the long-awaited good luck, a banquet was given at the already mentioned Shvabes Hotel,” writes Chertok. - And at the launch pad a large boulder was hoisted with

> the inscription: “October 3, 1942, this stone fell from my heart. Wernher von Braun. (We heard such a story, but when visiting Peenemünde, none of us paid attention to the stone.) "

However, a series of failures followed. There were also explosions at launch, explosions already in the air, steering gear failures, failures of gyroscopic instruments, valves in the fuel and oxidizer lines, on-board power supply failed. At the end of 1941, the

War Department began to take an intense interest in the problems of large-scale production of the A-4. At the same time, a large number of mutually exclusive options were proposed, most of which were rejected on paper. However, such a large number of specialists were involved in this work that the development of the A-4 was greatly slowed down.

Nevertheless, in 1943 the number of experimental launches had already reached 20. During these launches, the main shortcomings of the engine, supply system and automation were identified and eliminated. Serious work began on achieving the required accuracy of shooting.

In early 1943, a serious backlog was discovered in the development of ground equipment and ground services that control and provide flight tests. Simultaneously with the main staff of testers and developers of Peenemünde, military units began experimental launches, which were supposed not only to master this new weapon, but also to work out aiming methods to ensure shooting accuracy. To ensure research on ballistics and shooting accuracy, it was necessary to develop special on-board and ground radio equipment. In addition, the equipment of the flight path with optical means of trajectory control was strengthened. As a result of the launches, many shortcomings were revealed in the electrical circuits and the design of the control system equipment. Successful launches at a nominal range of up to 287 kilometers alternated with explosions, fires in the tail section, and again failures of the control system. The rocket was extremely unreliable, incomplete and required significant

improvements. But the political and military leadership of the Reich, as the general situation on the fronts worsened, with the adventurism characteristic of Hitler, increasingly pinned their hopes on the advent of a new weapon - missiles. After the Battle of Stalingrad, the defeat on the Kursk Bulge, the

situation on the Eastern Front developed in such a way that the use of such a missile as the A-4, in the conditions of the instability of the front line, could not stop the offensive of the Red Army. The situation was different with England. In the absence of a second front, one could rely on the use of the coast of the North Sea or the English Channel to create stationary starting positions with the aim of bombarding England. There was a glimmer of hope that the British, focusing on their own territory, would not dare to participate in landing operations, and the Americans alone would not do anything. The Fuhrer gave an absolutely fantastic instruction - to start an operation against England with the launch of a thousand projectiles and missiles a day. Then it was necessary to gradually increase the number of launches to five thousand a day!

In May 1943, the issue of priority had to be resolved: the V-1 projectile or the A-4 rocket - V-2. By this time, more than 25 A-4 launches had already been carried out, the last of which were successful. In terms of hit accuracy and range, the projectile and the A-4 missile were approximately the same - it was a weapon for firing at targets with an area the size of a large city. In this respect, London was a hard-to-miss target.

But British air defense systems have learned to deal very effectively with slow and low-flying V-1 projectiles (according to today's terminology, these are cruise missiles). They were shot down by anti-aircraft artillery, air defense fighters, they ran into barrage balloons. The new British radar facilities made it possible to detect the V-1 long before they approached London. The leaders of the Wehrmacht understood that by launching about a thousand V-1s with an 800-kilogram charge every month, of which hardly 40 percent reached the target, it was hardly possible to break England. In total, about 12,000 V-1s were produced in England. V-2 is another matter. All British air defense systems were powerless

against this missile.

The speed and altitude of the flight ruled out even the thought of any warning and announcement of an air raid alert. It

was required to organize large-scale production of the A-4. At the beginning of the creation of Peenemünde, it was assumed that the production of A-4 missiles, in any case, their final assembly and testing, would be carried out here, on the island. For this, a rather powerful production building was built, richly equipped with various technological equipment. However, it soon became clear that large-scale production required a completely different scale and in-line technology, which could not be carried out in Peenemünde. Therefore, the built plant was renamed the experimental Ferzuhwerk (FW). About 100 rockets were assembled on it.

In July 1943, Hitler personally received the leaders of Peenemünde and declared the rocket program a top priority for the entire Wehrmacht and all industry. Such a task required the development of technology and the organization of mass production of missiles. Construction began in Thuringia near Nordhausen of a huge underground plant with a design capacity of up to thirty A-4 missiles per day. This plant, called "Mittelwerk", by the middle of 1944 was already producing up to 600 A-4s per month!

The construction and production of A-4 rockets at Mittelwerk near Nordhausen is perhaps one of the darkest and most tragic pages in the history of German rocket technology. Foreign workers, prisoners of war, prisoners of concentration camps were used for construction and production under the guidance of German specialists and Gestapo overseers. All of them, before starting work

underground, were brought to the Dora concentration camp, created specifically for this purpose, right next to a picturesque-looking wooded mountain. Inside this mountain, the most severe regime was established: for the slightest violation of order and discipline at the plant - death. The chimney of the crematorium in the camp smoked around the clock. Workers died from beatings, torture, disease, exhaustion, and execution at the slightest suspicion of sabotage. None of the prisoners of the Dora camp were to leave alive the zone where the top-secret weapon of retaliation was produced. 9,000 skilled German workers were

sent by the AEG, Siemens, Rheinmetall-Borsig, Dynamite-DG, Krupp and Thyssen-Hitton concerns to work at Mittelwerk in the order of labor service. The Gestapo sent more than 30,000 prisoners from various concentration camps.

Nevertheless, an underground anti-fascist group, which included Russians, Czechs, French and German communists, worked in the camp. She organized sabotage at the plant under the slogan "The slower you work, the closer to the world!" The prisoners found ways to render useless the thinnest rocket assemblies. The Gestapo managed to

get on the trail of an underground anti-fascist committee led by the German communist Albert Kunz. Among those arrested and thrown into the dungeons of the Gestapo for interrogation were French officers, Polish partisans, Czech scientists, German communists, Soviet prisoners of war, whose names remain unknown to us to this day. But despite the mass executions, the sabotage continued. Anti-fascists were

also found among the German workers of the underground plant. One of them, a qualified locksmith Josef Zielinsky, who worked in Peenemünde and then sent to Mittelwerk, managed to establish contact with Soviet prisoners of war. He, too, was soon captured by the Gestapo and thrown into the punishment cell of the Nordhausen

barracks. The gallows was waiting for him, but during the Anglo-American air raid the barracks was bombed. He managed to escape and hide until the end of the war.

From people like him, miraculously surviving people, it was possible to learn something about the underground rocket production.

“The very first meetings in Nordhausen and then in Bleicherode with German specialists made it possible to find out the main characteristics of the serial A-4 rocket, which was produced at an underground plant and came from there directly to military units,” notes B. E. Chertok.

The cost of A-4, despite the use of free prisoner labor, was

over 300,000 Reichsmarks apiece! Apart from the cost of ground equipment, the maintenance of military units, fuel and oxidizer ... It turned out to be an expensive “toy”.

Nevertheless, in September 1944, A-4 rockets began shelling London. The V-2 raids caused great fear among the British. The missiles approached without any warning noise and acted like a bolt from the blue. Immediately after the combat use of the V-2, the

British conducted reconnaissance and then organized air raids on the missile launch sites, which were difficult to disguise. No other means of combating this scourge could be devised. Then the Germans switched to mobile launch pads. Interestingly, in the 1970s,

the idea of using mobile railway missile systems was being

intensively developed in the United States for the Midgetman missiles, and before that, the Minuteman. The USSR also developed and used options for launching intercontinental missiles using railway rolling stock. But the Germans were the first in this endeavor - mobile railway launches as a means of protection against air raids were developed by them back in 1944 in Peenemünde.

The A-4 missile was supposed to be launched from a simple design device mounted on a railway platform. The composition of the mobile start included tanks with alcohol and liquid oxygen, as well as everything necessary for pre-launch testing and equipment start-up. However, the Germans did not manage to bring mobile launches to the possibility of combat use.

And yet, according to the Lieutenant General of the SS troops, Dr. Kammler, who was in charge of the "artillery corps", responsible for all V-weapon control points, during September 1944, up to 15 rockets were launched per day. As the technology of rocket operation was mastered, it was possible to shorten the pre-launch preparation cycle. On October 30, 29 missiles were launched, on November 26 and December 26, the number of launches rose to a record figure - 33 launches per day! However,

in the memoirs of the Second World War one cannot find any mention of any significant losses of the allies as a result of rocket fire. The missiles had a much greater moral impact on the civilian population than they brought real damage to the economy or the armed forces. According to various sources, 2,000 rockets fired at London in

seven months resulted in the death of 2,700 people. Agree, this is not so much. In any case, the number of anti-fascists burned in the crematorium of the Dora camp and destroyed during the construction of Peenemünde and the missile test site in Poland, those who died in dungeons and executed, was much higher.

trophy hunting

Well, what did the Allied intelligence and ours do during these years? Soviet intelligence, twice defeated, first under Yezhov, then under Beria, can still somehow be forgiven for not knowing the scope of work in Germany on missile weapons. But the famous Western intelligence services also overlooked the secret, which in Germany was already known to tens of thousands of civilian and military specialists. The orders of Peenemünde and Mittelwerk were carried out by many dozens of firms scattered throughout the country. Experimental missile launches into the Baltic Sea have been carried out since 1940, and at a training ground in

Poland since 1943. It seems unlikely, but nevertheless, until May 1943, neither intelligence reports, nor information from prisoners of war, nor air reconnaissance and other types of intelligence brought reliable information about the true scale of work on the new secret weapon. There is

a plausible legend that the targeted search for German rocket weapons did not begin until May 1943, when a meticulous aerial photography interpreter in London discovered a small aircraft without a cockpit in one of the photographs of Usedom Island. It was a Fieseler-103 projectile, later called the V-1. Repeated aerial photographs made after that soon revealed "small cigars" - A-4. Only then did the British General Staff begin to analyze undercover

data received from France, Poland, Norway, Sweden.

From them it followed that in December 1943 we should expect shelling of England with new weapons - projectiles and some huge rockets. Aerial reconnaissance has already identified 138 possible launch sites on the northern coast of France and Holland. From France, photographs of the launch sites and information about special military units for servicing special-purpose weapons were delivered to the British.

But even three and a half years earlier, the engineer Kumerov, at the risk of his life, dropped a letter into the mailbox of the British embassy in Oslo, in which he pointed out the existence of such developments in Germany. How much precious time was wasted! .. Comparison of all the data on

the so far unknown rocket weapons with information about the work of the Germans on the "uranium project" aroused fears among the British: is there a connection between these two works. Churchill was fully

informed about the work of the Americans on the atomic bomb. Moreover, he facilitated the dispatch of English scientists to the United States to work on this problem, in order to get ahead of the Germans at all costs. Well, what if these projectiles or the

"cigars" found in the pictures are associated with
German work on the atomic bomb?

It was dangerous to delay further. And Churchill gave his consent to the bombing of Peenemünde. A disorienting tactic was developed for the British Air Force. Prior to this, for many weeks, the pilots of the Anglo-American aviation, returning from the bombing of Berlin, had to fly over Usedom. The air defense of the island had strict orders not to open fire and not to raise fighters into the air, so as not to draw the attention of the enemy to the top-secret island. So it was until August 17, 1943. The day before, Marshal of the Royal Air Force Sir Arthur

Travers Harris invited the officers responsible for the upcoming operation and warned of the special responsibility of the crews and the extreme importance of hitting the target. “If the raid fails, it will be repeated on subsequent nights. In this case, however, it will not be possible to avoid large losses. The first waves of bombers flew over Usedom late in the evening of 17 August 1943 without dropping

a single bomb. They didn't even announce an air raid alert downstairs. Suddenly, flares lit up over the northern tip of the island. The first and strongest bombing strike in the history of Peenemünde began. 597 four-engine bombers dropped thousands of high-explosive and incendiary bombs on the forbidden zone and the nearest village. One wave of bombers followed another, covering industrial buildings, bench structures, and laboratory buildings with a “bomb carpet”. A total of one and a half million kilograms of high-explosive and incendiary bombs were dropped. Peenemuendovites, as already mentioned, lost 735 people killed and among them many leading specialists, including the chief designer of engines, Dr. Walter Thiel. Having learned about the scale

of the raid, the deputy commander of the Luftwaffe, Colonel General Jeschonnek, who was directly responsible for the air defense system of the area, committed suicide. But Dornberger and von Braun did not give up. They assured the head of Himmler's security service, SS Obergruppenführer Ernst Kaltenbrunner, who had flown to Peenemünde, that the survivors of

Peenemünde would be able to overcome the consequences of the disaster. Work slowed down, but did not stop. The air war against Peenemünde once again confirmed that it was completely impossible to stop experimental work in open space by conventional air bombardments, even so powerful.

In connection with the bombing of Peenemünde, the Wehrmacht in August 1943 decided create a reserve research site in Poland to continue work on the A-4.

At the same time, the task was to strengthen the training of military formations to serve combat positions. For this purpose, Himmler proposed the Heidelager SS artillery range, located in the Debice area between the Vistula, Wisloka and San. The director of shooting passed from the town of Blizna to the north-north-east in the bend

banks of the Bug to the Siedlce-Sarnaki region east of Warsaw. The landfill and all its facilities were carefully camouflaged. The prisoners of the Pustkow concentration camp (approximately 2,000 people) used in the construction were subsequently completely destroyed.

In the villages of Blizna and Pustkow, the 444th test battery, the Blizna Artillery Range, is located. The first experimental launch in Blizna in the field was carried out by test battery 444 on November 5, 1943, and the first combat use of the A-4 began only a year later.

When firing on Polish territory, failures followed one after another. Some rockets did not take off: immediately after ignition, the circuit “dumped”, some took off and immediately fell “on the tail”, destroying the starting position, others exploded at an altitude of only a few kilometers due to fires in the tail section, fell due to control system failures, destroyed in the air due to aerodynamic heating of the oxidizer tank, etc. Only 10-12 percent of the launched missiles reached the target.

Serial production at Mittelwerk was already in full swing, and Peenemünde specialists made desperate attempts to find out, through new and new series of test launches and continuous improvements, the causes of destruction in the air. Now such a

method seems to us an anachronism, because, as a rule, the task is to ensure the successful launch of a new rocket from the first attempt. At that time, there were no other means to accumulate experience. We partly went through such a difficult path in Kapustny Yar in 1947-1948. The lack of

multichannel telemetry systems also affected. The first radio telemetry system "Messina 1" had only six channels. But its use was also limited due to radio masking at the Polish training ground.

On August 30, 1944, the last, eightieth, test launch took place near the village of Blizna. In connection with the advance of the Red Army, the test battery from Blizna was redeployed to the area south of Lyuttikh and fired the first combat shot from there. He was sent to Paris. Three days later, regular long-range ballistic missile attacks began on London. Thanks to the actions of the Polish partisans and underground

fighters, the British secret service received very valuable information about the test site in Poland. They even managed to send a plane for the parts of the missiles recovered by the partisans from the places of their fall. In addition, the British received the remains of a rocket that fell on Sweden. It was impossible to delay any longer, and

Churchill turned to Stalin directly for help:

> “A personal and strictly secret message from Mr. Churchill to Marshal
> Stalin: 1. There is reliable information that for a considerable time the Germans were testing flying missiles from an experimental station at Debice in Poland. According to our information, this projectile has an explosive charge of about twelve thousand pounds, and the effectiveness of our countermeasures depends to a large extent on how much we can learn about this weapon before it is used against us. Debice lies in the path of your victoriously advancing troops, and it is quite possible that you will take possession of this point in the next few weeks.
>
> 2. Although the Germans will almost certainly destroy or remove as much of the equipment located in Debice as they can, it is likely that much information can be obtained when the area is in Russian hands. In particular, we hope to learn how a rocket is launched, because this will allow us to set up rocket launch sites.
>
> 3. Therefore, I would be grateful, Marshal Stalin, if you could give proper instructions on the preservation of those equipment and devices in Debica that your troops will be able to capture after mastering this area, and if you would then give us the opportunity to study this experimental station by our specialists. July 13, 1944".

Churchill and Stalin exchanged six telegrams in 1944 regarding the participation of British specialists in an expedition to the German testing station at Debica. Stalin instructed the British to be allowed to inspect the test site, but not as quickly as Churchill wanted. Due to the extreme secrecy of Prime Minister

Churchill's correspondence with Stalin, the texts of the letters became available much later than the death of both leaders. In July 1944, the Soviet rocket

scientists who worked at NII-1 (the former RNII) knew nothing about the training ground in Poland and knew practically nothing about the A-4 rocket. As can be seen from Churchill's letters, the British also had a vague idea about the rocket.

All the instructions that Stalin mentions in his letter were given directly to the General Staff. Accordingly, our army intelligence services received orders to be especially active in reconnaissance of the Debice area, which in July 1944 was still 50 kilometers from the front line. At the same time, through the people's

commissariat of the aviation industry, Shakhurin received an order from Stalin to prepare a group of Soviet specialists who should study everything that would be found at this training ground even before British specialists appeared there.

Immediately in the hot pursuit of the war, after the liberation, the first expedition was sent to the area of the proposed test site as part of military intelligence, subordinate to General I. A. Serov. Yu. A. Pobedonostsev, M. K. Tikhonravov and several of their direct technical assistants were included in this group from NII-1. They "dug" in Poland for quite a long time under heavy guard. After our group had worked in Poland for about a week, British specialists arrived there, including a representative of British intelligence, who had a detailed map of the area. The coordinates of the launch sites and numerous points of impact of missiles were plotted on the map.

Tikhonravov, returning, said that our military intelligence officers traveled around the training ground, using the instructions of the British, and their map never failed. British agents gave accurate data.

Churchill's appeals to Stalin were in many respects truly decisive for our future activities. If not for his letters, our army would have marched victoriously through these Polish swamps and forests, without delving into what the Germans were doing here.

And with the help of the British, the real parts of the A-4 missiles were quickly discovered and for the first time fell into our hands. True, in the first days after the delivery of missile trophies from Poland to Moscow to NII-1, they were, on someone's wise command, classified from Soviet missile specialists, probably as strictly as they were kept secret in Germany from the British

spies.

All the details were placed in the large assembly hall of the institute, where only the head of the institute, General Fedorov, his deputy for scientific affairs, General Bolkhovitinov, and the deputy for the regime, received access. Even Pobedonostsev and Tikhonravov, who saw all this in Poland, were loaded onto a plane and brought with them, at first they were not allowed.

But gradually common sense began to take over. A. M. Isaev, then B. E. Chertok, I. A. Pilyugin, V. P. Mishin and several other specialists were allowed to inspect secret German weapons.

> “When I entered the hall, I immediately saw a dirty black bell, from which the lower part of Isaev’s torso was sticking out,” recalls Chertok. - He climbed headlong through the nozzle into the combustion chamber and examined the details with the help of a flashlight. An upset Bolkhovitinov sat
>
> next to him. I asked: - What is
>
> it, Viktor Fedorovich? - This is something that
>
> cannot be! came the answer. LRE of such dimensions in those
>
> days, we simply did not imagine. According to Tikhonravov, who delivered this engine from the Polish swamp, its location was also indicated on the British intelligence map. The Englishman who led them to this swamp said that the coordinates of the place were given by the resident, who, in turn, received them from the Polish partisans.

Not far away they found torn aluminum tanks, pieces of the outer steel shell and white patches of barbed glass wool. Not everything was recovered from the swamp. The explosion of the fuel components scattered the parts of the rocket around the neighborhood.

The British were very interested in the surviving remnants of radio equipment and control system instruments. They collected several large boxes of all kinds of parts for urgent dispatch to England via Moscow. Upon the arrival of the English boxes in Moscow, we were offered to inspect the contents the night before they were handed over to the British mission, which I, Pilyugin and two other engineers did in the Khoroshevsky barracks.

The group headed by Bolkhovitinov, which included Isaev, Mishin, Pilyugin, Voskresensky and myself, was given the task of reconstructing the general view of the rocket, the control principle and main characteristics from the fragments found. A year later, while working in Germany, I was convinced that we basically reconstructed the rocket correctly, and this greatly facilitated our further activities.

The search teams of the former allies scoured Germany, stepping on each other heels.

"After a short inspection of the terrible Dora camp, we hurried to explore Mittelwerk itself," writes Chertok. - I must honestly admit that we were in a hurry to leave the camp not because there was no time at all. Horrors, oh which living witnesses who came from somewhere began to tell us, did not fit in so well with the radiance of a hot July day and our mood of passionate hunters, who finally seized on real prey, that an involuntary desire to throw off this obsession appeared. We were shown the area where the corpses lay before being delivered to the crematorium, where the ashes were raked out. Now there were no traces of ash anywhere. Under the Americans, a commission has already worked here, fixing atrocities and war crimes. The camp was turning before our eyes into a hostel for displaced persons. But the ashes that we could not see began to knock both in the heart and in the temples.

Before entering the Mittelwerk, a group of Germans were already waiting for us, who showed up as a result of the actions of the burgomaster's service. A young German, lean, with thin, clear features, separated from the group. He boldly approached, introduced himself: "Engineer Rosenplanter from Peenemünde." He explained that he had been evacuated from Peenemünde along with everyone here to Nordhausen, and then they were settled not far from here in Bleicherode. Von Braun and Dornberger, whom he personally knows, also lived there for the first time. They left Bleicherode further west.

Before the arrival of the Russians, the Americans sent almost all the specialists to the cities of Vorbis and Witzenhausen. He and several dozen other specialists refused to move, and the American officers, having consulted their lists, did not insist. But some who resisted were taken, regardless of their desire ... On the first inspection of the legendary underground missile factory "Mittelwerk" our specialists spent almost two days.

Mittelwerk literally translates as "middle plant" or "plant located in the middle." He really was in the middle of Germany. The construction of this plant went under the code "Mittel-bau" - "Middle construction". It began in 1942, even before the successful launch of the V-2 (or A-4) rockets. It didn't take much to go deep into the ground. The builders successfully used the natural relief.

The wooded hill, which the local geography proudly calls "Mount Kokstein", rises four kilometers from Nordhausen almost 150 meters above the surrounding area. The limestone rocks that make up the filling of this mountain were easy to tunnel. In the mountain along the diameter of the base, four through adits were cut, each more than three kilometers long. All four adits were connected by 44 transverse drifts. Each adit was a separate assembly line. The two left galleries were factories of aviation turbojet engines BMW-003 and YuMO-004. These engines already in 1942 were brought to a state suitable for mass production. And here the Germans overtook us, the British and

Americans. But due to someone's (for us, of course, beneficial) stupidity, they did not take advantage of this advantage and did not launch large-scale production of jet twin-engine Messerschmitts Me-262, which were equipped with these engines. These aircraft in small numbers appeared on the fronts only at the end of the war. In post-war memoirs, German generals wrote that allegedly Hitler personally was categorically against the use of these aircraft for a long time. This is how the stubbornness of a dictator brings invaluable benefits to his mortal enemies.

The third adit served for the production of "wing bombs", or, in modern terms, V-1 cruise missiles, the mass production of which began in 1943. Only the fourth adit served for the

assembly and testing of A-4 missiles. A train could roll into each adit

directly from the surface, bringing materials. He left from the other end, loaded with finished products ... The adit for the assembly of A-4 missiles was more than 15 meters wide, and the

height in some spans reached 25 meters. In these spans, the so-called vertical "generaldurchshal-tferzuhprüfung" were produced. We then translated this and legalized it - for a long time for all missiles - as general vertical tests. But before that, horizontal tests were carried out. They did not have the prefix "general".

In transverse drifts, manufacture, assembly, input
control and testing of subassemblies and units before their installation on the main assembly.

Inspection of adits and drifts was hampered by the fact that the lighting was partially damaged, as we were told, by order of the Americans. Only the "duty" lamps were lit. Therefore, it was necessary to walk around the plant very carefully so as not to fall into any technological hole or break on the remains of uncleaned rocket parts.

We drew attention to a large number of randomly scattered rocket components. One could easily count dozens of "tails", side panels, middle parts, tanks, etc.

The German, who was introduced as an assembly test engineer, said the plant was running at full capacity almost until May. In other months, its productivity reached 35 rockets per day! The Americans selected only fully

assembled missiles from the factory. There are over a hundred of them here. They even organized electric horizontal tests, and before the arrival of the Russians, all the assembled missiles were loaded into special wagons and taken to the west - to their zone. But the remaining units should have been enough for 10, and maybe 20 missiles.

The Germans said that all the special purely rocket testing technological equipment had been removed. But ordinary machine tools and typical general-purpose equipment in all workshops remained untouched. Rich overseas hunters for rocket secrets did not need even the most advanced metal-cutting machines.

And BE Chertok did not forget to tell about one more memorable meeting in Germany.

“Many years later, when the name of Korolev became widely known throughout the world, recalling the first meeting, I asked Pobedonostsev and Tyulin why they had not told me anything about who Korolev was, who was traveling from Berlin to Bleicherode,” writes Boris Evseevich. - They did not even warn, as they usually did with other senior officers, where he was seconded from - from industry or from the army. Both of them answered my question in approximately the same way: “Why are you asking such a naive question now?” Pobedonostsev knew Korolev very

well, because he had worked with him at the GIRD and RNII since 1930. They lived with their families in the same house on Konyushkovskaya Street of Krasnaya Presnya and met almost daily at work and talked until the day of Korolev's arrest - June 28, 1938. I met Pobedonostsev for the first time in 1942, when he, together with A. G. Kostikov and L. S. Dushkin, came to Bilimbay

to observe firing tests of a liquid-propellant rocket engine developed at the RNII. After the destruction of the first leadership of the RNII - Kleymenov and Langemak - a heavy burden was placed on Pobedonostsev to organize work on powder rocket shells and launchers. In 1944, already at NII-1, I often

communicated with Pobedonostsev on official business with our common patron, Bolkhovitinov. Almost every day I met him at a large dining table in the dining room for the leadership of NII-1. Employees of NII-1, who knew Korolev very well from all his previous work, gathered together in this dining room. Among them was Mikhail Klavdievich Tikhonravov, Korolev's co-author on the very first rocket work at the Moscow GIRD. But never at this table, nor in any other places and at any other time, have I heard the mention of the names of Korolev or Glushko ... "" In Germany, I very often talked in Pobedonostsev, but here, before the phone call from

Berlin, this surname did not mentioned," Chertok continues. "According to unwritten laws, the names of the repressed were tabooed. It was possible to mention them and talk about them only at closed party meetings and all sorts of "assets" that followed immediately after the arrest. At the same time, it should have been said that "we overlooked how the enemies of the people worked alongside us." The "good" tone of that time demanded that each speaker denounce the enemies of the people and at the same time, in a burst of self-criticism, list all the shortcomings that one could think of in the work of a group, department or the entire institute. Then, having sworn allegiance to the great Stalin, who warned us in time about the aggravation of the uncompromising class struggle, it was necessary to say that we would rally "around the great cause", correct the shortcomings, strengthen and ahead of schedule "fulfill and exceed". After the exposing campaign and a series of similar speeches, the names of the "enemies of the people" should have been erased from memory.

If they were the authors of books or journal articles, then these books and journals were subject to removal from libraries. Usually they were hidden in the so-called "special fund" and issued in case of emergency with the permission of the commissioner for the regime, who was an employee of the state security agencies. This was the case from 1937 until the outbreak of the war. During the war, some repressed military leaders and designers received

freedom, but, nevertheless, the "taboo" syndrome persisted almost until the end of Stalin's life.

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In those years, Chertok grossly violated the regime established for the storage of scientific works of "enemies of the people." In 1935, in the kiosk of plant No. 22, he saw a book, on the cover of which something similar to an aerial bomb was depicted. Having laid out 1 ruble 50 kopecks, Boris Evseevich immediately purchased this book. And only later did he discover that he had bought the work of G. E. Langemak and V. P. Glushko "Rockets, their device and application", written back in 1934 and published by the Chief Edition of Aviation Literature with a circulation of only 700 copies.

"Having looked very quickly, I did not find almost anything in the book that interested me then, but I realized that there are people and organizations that are working on aircraft that have nothing to do with airplanes," Chertok continues his memoirs. - In 1937, when it came to installing a new type of weapon on our aircraft - rockets, and as the head of the equipment and weapons design team, on duty, I was supposed to quickly understand what it was, I remembered this book, found it in my bookcase and got so carried away that I consider myself attached to the problems of rocketry since that 1937. But the aviation business again swept over, the book was again hidden in the closet. In 1941, when I was evacuated to the Urals, my poor library was left in an old

wooden house, where I lived with my parents in a "cotton" factory. I remembered this book only in Bilimbay in the Urals, when Isaev and Bolkhovitinov returned in 1942 from Kazan, where they met in a special prison of the NKVD with a certain developer of rocket engines

Valentin Glushko. I told Isaev about the existence of such a publication. He decided to find this book in the libraries of Sverdlovsk. But she wasn't

there. As soon as I returned to Moscow, to my great joy I discovered that my library was intact. Only one volume from Gogol's unique pre-revolutionary eight-volume collection of works has disappeared. The book of Langemak and Glushko has survived! In 1944, when our OKB 293 was merged with

NII-3, I used this work to supplement my knowledge of the principles of rocket technology. Having lost my vigilance, I somehow brought her to work at NII-1. One of my new employees, but an old employee of the RNII, who knew Langemak and Glushko very well, saw this book on my desk, was seriously worried and warned me not to take it away and not bring it to the institute again: “Langemak was shot, but Glushko, although alive but condemned. In the institute library, this book is in a special fund and it is impossible to get it. You violate the regime, risk earning trouble, losing a good book.

Naturally, I again hid this work behind other books. But I can boast that having kept the book so far, I am the owner of a rarity ... "

“Thus, when I met Korolev for the first time at the end of September or at the very beginning of October 1945, I didn’t know anything about him except for his first name, patronymic and last name,” recalls Chertok. - When he came to me, I stood up to meet him, as it should be for a major in front of a lieutenant colonel. We greeted and introduced ourselves.

Nearly half a century has passed since that first meeting. There were countless different meetings during this time. Most, at least in detail, were erased from memory, but this one was remembered. This means that there is some kind of subconscious "on duty" memorization system outside our ordinary mind, which is turned on "for recording" regardless of our will, this recording is not erased and can be played back many times.

The brand new officer's uniform sat very well on the newcomer. If it were not for the absence of any medals, I would have decided that in front of me was a career officer. But the complete emptiness of the “order” places on a clean tunic immediately betrayed a “civilian” officer. Only good officer's chrome boots were unusual instead of our usual tarpaulin boots. Dark eyes with a kind of cheerful spark looked at me with curiosity and attention. In appearance, the Queen immediately attracted the attention of a

high forehead and a large head on a short neck. There is such an expression - he put his head on his shoulders. No, Korolev did not take her in. That's how nature made it. Something from a boxer during a fight. Sat down. He sank into a deep armchair and stretched out his legs with evident satisfaction. This is usually done after a long sitting behind the wheel. "I would like to know very briefly about the structure and work of your institute."

I always had a diagram of the structure of the Institute in a folder on my desk. Of course, drawn by the Germans, with German inscriptions.

Korolev, not very carefully and irreverently, as it seemed to me, began to examine it, making it clear that he did not like that the scheme was German. He asked one question and immediately fell into our weak spot: “And who is responsible for mastering the launch technique, for launch training?” I explained that Lieutenant Colonel

Voskresensky was studying this issue with a small group of Germans, among whom there were two or three who had actually shot. In the near future, the military will form a special unit that will study the entire technique of shooting. So far, we have focused all our efforts on having something to shoot with. It is necessary to re-create the rockets themselves, and the main problem is all the control devices. As for the engines, a lot of them were found in Leesten, and firing tests are already underway there.

He looked at me quite cheerfully and decided to open up a little: “Yes, I have already been to Leesten. They work great there, including my old friends.”

“Ah, that's what,” I thought, “so you are an engine engineer. But from

where? Several minor questions followed. Probably more out of courtesy. I suggested that the Queen go through the laboratories. "No thanks," he refused.

Korolev. I am returning to Nordhausen today. But I have a feeling that you and I still have a lot of work to do, ”he added, saying goodbye, and shook hands
much stronger than at the meeting.

Meanwhile, competition between the Allies for German trophies continued to grow. The
British demonstrated V-2 launches to the Allies in the fall of 1945 in Cuxhaven. What could be the answer, showing that we also figured out this secret weapon and, moreover, we already own its technology without the help of the Germans? Our "Russian
revolutionary scope" turned out to be much more grandiose according to the propaganda plan. We were not ready to launch missiles even with the help of the Germans from the territory of Germany. Moreover, in 1945 we were not able to do this on our territory. In the hands of the British and Americans were fully tested missiles, an oxygen plant, refueling and launch equipment, along with the entire economy of launchers and a military team that had extensive experience in shooting at England. And then a response idea was born in our
circles. During the war, a large exhibition of all types of captured equipment was arranged on the territory of the Central Park of Culture and Leisure in Moscow. The exhibition was a great success and had a great propaganda value: it lifted the mood in the most difficult years. This exhibition has significantly expanded after the victory. Someone had the idea to bring the V-2 to the exhibition. Naturally, experts assumed that for the exhibition it would be enough to assemble rockets
without instrumentation, without electric automation, especially since the propulsion system should impress only with the size of the nozzle. But soon an absolutely amazing team arrived from Moscow. The missiles must be ready for firing
tests at the stand to be built on the Lenin Hills. The fire torch should fall with a terrible roar from a height of 80 meters onto the banks of the Moskva River to the delight of all spectators - Muscovites and numerous foreign guests who will come to the capital to celebrate the 28th anniversary of the October Revolution. This will be a festive fireworks display in addition to the already familiar victorious salutes!

Probably, Stalin himself will want to admire such an unusual fire show. And after that, all decisions on the development of rocket technology, despite all the post-war difficulties, will pass faster through the Politburo. And there, of course, they will ask who organized all this, and the organizers of the fire attraction will be instructed to lead the creation of a new type of weapon. Such a task immediately shifted the main responsibility from the rocket assemblers to the engine engineers. At the base in Leesten,
there were “mailerwagens”, trolleys for transporting missiles, tanks for transporting and filling liquid oxygen, refillers of alcohol and much more. Distinguished guests frequented Leesten, who did not refuse to taste rocket fuel: fortunately it was ethyl alcohol of the highest purity.

Throughout the period from July to September, our engine engineers studied and mastered the technology of testing and adjusting engines. More than 40 fire launches were carried out in various modes. To the surprise of the Germans, our testers were more daring and went far beyond the traction control regimes that were allowed. At the same time, it was found that the A-4 engine can be greatly boosted - up to a thrust of 35 tons. The technology for measuring traction characteristics, calculating and selecting blends, pouring oxygen nozzles, express analyzes of the chemical and physical properties of fuel for the combustion chamber and components for the steam and gas generator, pouring alcohol nozzles, etc. were worked out.
was interrupted by a team about preparing for a fire launch on the Lenin Hills in Moscow. All the work had to be done in one month. Arvid Pallo made the right decision, which was then approved by Valentin
Petrovich Glushko, who appeared in Leesten in October. The missile, which is being assembled in Kleinbodungen, is equipped with a fire-tested chamber in Leesten. A special stand is being designed and manufactured here to install the rocket in Moscow. It is equipped

equipment necessary for preparation and launch: high-pressure cylinders, tanks for alcohol and oxygen, all pipelines and valves, remote control panels for starting the engine.

With the help of the Soviet military administration of Thuringia and local authorities, using rocket alcohol as an incentive, everything was designed, manufactured and tested in a month in Saafeld. Two rockets assembled without engines were sent to Leesten. There they were finalized, completed and tried on to the stand.

The echelon with the entire economy for organizing fire tests in Moscow amounted to 16 cars. Pallo himself led this responsible expedition and heroically made his way through the territory of Poland and Brest, which was packed to capacity with wagons. Finally we got to the Belorussky railway station in Moscow. Here the military authorities, having received the entire echelon, released Pallo and all those accompanying him to all four directions. While the expedition was moving from Germany, overcoming dozens of obstacles, the idea of firing launches on the Lenin Hills was reported to Stalin by one of the members of the Politburo, but did not receive approval. That's where it all ended...

So were there Nazi astronauts?

A lot has already been said and written about the further development of events in our cosmonautics, the creation of the famous "seven" under the leadership of S.P. Korolev. Let us, therefore, conclude this chapter by returning to the questions posed at the very beginning. So were there own astronauts in Nazi Germany?

Indeed, when the remote-controlled version of the A-4 got to the Scandinavians, it was an opportunity for Wernher von Braun to return to his postponed project and propose instead of the A-4 its manned winged version of the A-3. The wings, as conceived by the designer, performed a dual role - they sharply increased the flight range, significantly reduced overloads and speed at the final stage of the trajectory, which made it possible for the pilot to control it (A-4 rockets approached the Earth at supersonic speed).

The winged version of the A-4 was tested - the flight range increased to 600 kilometers, which the rocket overcame in 17 minutes.

The military archives failed to find evidence that this test was carried out with a pilot on board. However, a little earlier, “saboteur No. 1” Otto Skorzeny really recruited “military cosmonauts” for piloting rocketry into the detachment. Different sources give their number - from 100 to 500 people. “But the collapse of the Third Reich was approaching,

and Wernher von Braun, realizing that either his secret brainchild would rise into space now or never, suggested to the Fuhrer that he use his A-3 / A-10 system to bombard New York!” - writes about this candidate of physical and mathematical sciences, scientific consultant of the Leningrad Commission on anomalous phenomena V. Psalomshchikov. According to his data, missile tests soon began and, at the same

time, a covert operation code-named "Elster" was carried out. On the night of November 30, 1944, a special team was landed from a submarine near the American coast, the purpose of which was to install a guidance beacon on one of the New York skyscrapers. However, the operation failed - the German agents were captured by the FBI, and they had to return to the original manned version. A number of sources indicated that an intercontinental rocket was supposed to be piloted by a kamikaze astronaut, but

this is not entirely true - the pilot could eject over the Atlantic Ocean before approaching the target and then be picked up by a submarine. According to some reports, the tests of this rocket monster took place on January 8 and 24, 1945

of the year. The first turned out to be unsuccessful, but there is no information in the archives regarding the second.

Nevertheless, most likely, the space flight along the route Germany - America with a TNT "gift" on board did not have time to take place. But if it nevertheless took place and turned out to be successful, then, since when flying along a ballistic trajectory, the rocket enters outer space, the person who was on board could claim the title

astronaut. It was for such flights in May-June 1961 on the ship "Mercury" that the first American astronauts Shepard and Grissom received their titles.

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However, one cannot say anything for sure, since this story, in a sense, has no end. After the end of the war, the A-9 / A-10 project, which was at least a decade and a half ahead of future American and Soviet developments, mysteriously disappeared. Although the Americans managed to remove all the equipment of the underground plant from Nordhausen, along with a hundred copies of “finished products”, and at the same time got the chief designer, the project did not “appear” in America.

According to one version, Berner von Braun did not seek to advertise the system, which he himself proposed to use to shell New York: if this story surfaced, the Americans could take it extremely negatively. However, in fairness, we note that

there is another version, according to which the A-9 / A-10 project existed only on paper, only to please the Fuhrer, who demanded the impossible from specialists - to turn the tide of history back.

However, the idea of a manned launch itself was revived in 1946–1947 in the VR-190 project, which was developed by Tikhomirov's group. Since, as we already know, things were very bad with electronics in the USSR, the idea arose to use the German experience - to put two astronauts in a rocket (one would simply not have time to cope with all the levers and switches). However, this idea was also successfully rejected ... This could have ended our intriguing chronicle of the development of a rocket

weapons in the Third Reich, if not for the latest publications of our time.

Our former, and now American ufologist Vladimir Terzinsky, recently speaking to Russian cosmonauts and scientists with a demonstration of rare films and photographic documents in Star City, made a sensation. According to him, in March 1945,

the Germans launched a flying saucer to Mars with a diameter of 70 meters and a height of a ten-story building. Moreover, the flight control was carried out from ... the South Pole! Some facts from A. Kulsky's book "At the

Crossroads of the Universe" are in contact with this, in essence, sensational information. The author writes that in September 1995, a "most interesting symposium" was held in Crimea, at which a unique documentary film was shown, shot in Europe quite recently, called "UFO in the Third Reich." The three-hour film literally shocked those present.

The basis for the tape was the materials of the fascist secret society "Annenerbe" (literally "legacy of the ancestors") - a special occult research institute created by the Reichsführer SS Heinrich Himmler.

Members of this society managed to discover some secret keys that allowed them to receive unique, including technical, information. One may not believe this, but the fact remains that there were two women in the Annenerb who did the main work of receiving information from outside, and that it was as a result of this that the drawings of the flying saucer were obtained. According to them,

the production of two test apparatuses began. They participated in air battles and surpassed the capabilities of the Allied armies by an order of magnitude. A. Kulsky notes in this regard: “It was the downed planes of the allied armies that crashed into the ground, while the Nazi saucers remained in the sky. Photo documents and photographs of the first two flying saucers were shown on the screen. They are similar, but there is still a difference. One plate was retrofitted, just in case, with an internal combustion engine, and the other was left unchanged.

From the same film it follows that in the winter of 1940, a modified Nazi flying saucer crashed in Norway. This accident has been documented, photographic materials have been filmed, including pictures of responsible persons from the Annenerbe near the crashed aircraft.

And in the same year, according to the authors of the film, the allies collided with saucers in air battles over the ocean. The surviving witnesses of air duels with the German "discs" are still full of emotional and very unpleasant memories.

And that is not all. It turns out that the memorable arrest of Wernher von Braun by the Gestapo is related to the Black Order. As you remember, von Braun and his colleague were accused of unwillingness to contribute to the military successes of the Third Reich. And instead they, they say, dreamed of interplanetary travel. That is, to put it another way, they were planning to escape from a country that was suffering a catastrophe somewhere far away - to the Moon, to Mars, or, at least, to low Earth orbit. And they would have

been hanged if the arrested had not been beaten off by Colonel Walter Dornberger. Under his strict guidance, designers were able to work, being free from bureaucratic slingshots, and even create projects that seemed utopian. In particular, realizing that they would not be able to fly away on their own, they sent three German astronauts into orbit, which were discussed at the very beginning of the chapter. All this and many other information about the "Black

Order", about the UFO of the Third Reich, about the planned flight to Mars, etc., I gathered from the publication "Arguments and Facts", under which two prominent specialists did not hesitate to put their signatures - Lev Melnikov, Academician of the Tsiolkovsky Academy of Cosmonautics, Academician of the UN International Informatization Academy, and Vitaly Menshikov, Corresponding Member of the UN International Informatization Academy. How they argue their reasoning can be seen at least from such a passage. First, the following quote is given

from the memoirs of the former Minister of Armaments of the Third Reich, Albert

Speer:

> “The jet-powered aircraft was not the only superior weapon that in 1944 could be transferred from development to mass production. We had a flying, remotely controlled bomb and a rocket plane even faster than a jet plane; a rocket bomb aimed at an enemy aircraft with the help of heat rays, and a naval torpedo. Catching the sound echo of the departing ship, the torpedo itself went to the course of the ship, pursued it and was able to hit the target. The design of the ground-to-air missile was completed. The designer Lippish in the drawings developed a project for a jet aircraft - several modifications that far exceeded the then level of aircraft construction. He designed a machine using the so-called "one wing" principle.

And after that, an unexpected conclusion follows: "Thus, Speer confirms: in Nazi Germany, a prototype of a flying saucer, a new type of aircraft, was created." But you and I know what project Lippisch

really worked on ... And here it remains only to state: if the full members of the

Academy of Cosmonautics think at this level, then it seems that in the coming century we will only have to rely on "flying saucers". More, it seems, our astronauts will not fly into space

on what…

On the Threshold of Hell: Nuclear Research by German Physicists

The most likely candidate for the role of "wonder weapon" is, of course, the atomic bomb. Could the physicists of the Third Reich have

created it? The history of the creation of the German atomic bomb, as you know, ended in the happiest way. On the

afternoon of August 6, 1945, British Army Major T. H. Rittner, an employee of the special internment camp at Farm Hull, received a secret order from London. He was ordered to gather the German nuclear physicists who were held in this camp. At 18.00, a BBC emergency was expected.

The first person Rittner mentioned was, of course, Otto Hahn, the man who discovered the fission of uranium nuclei in 1938, the man who opened the way to the creation of the atomic bomb. Professor Otto Hahn knew English well, and therefore, looking at him, Rittner could easily see what effect this news would have. In addition to him, Farm Hull

also contained many celebrities of world science. There were Erich Bagge, Karl Friedrich von Weizsacker, Karl Wirtz, Werner Heisenberg, Walter Gerlach, Kurt Diebner, Horst Korsching, Max von Laue and Paul Harteck.

However, Rittner called only three to the radio: Hahn, Heisenberg and Wirtz - the rest would still not fit in the cramped little room. And they didn't know English either. And at the appointed hour, the voice of the announcer sounded, who said that a new type of bomb had been dropped on the Japanese city of Hiroshima, equal in strength to two thousand conventional 10-ton bombs in service with the British Air Force. Otto Hahn was horrified: “Listen, Rittner, six years ago I

realized how dangerous it

was, my

discovery, but I did not believe, I still did not believe that this bomb could be created ...

The commandant had to calm down the confused scientist and even offer him a portion of gin.

Wirtz, meanwhile, jumped out of the room and rushed to the dining room, where his colleagues were going to dinner. The news brought by him, they met with deathly silence. A few seconds later, this agonizing pause was replaced by incessant, erratic screams. The British intelligence officers who overheard this spontaneous dispute noted in their report that most of them, even when faced with the obvious, still did not believe that such a bomb could be invented and delivered to the site by aircraft.

Even Professor Werner Heisenberg himself - one of the most famous theoretical physicists, Nobel Prize winner in 1933 - was sure that the Americans were "fooling the whole world." Walter Gerlach wrote in his diary: "Heisenberg vigorously disputes the very possibility of the Americans creating such a bomb ... The Americans have some very powerful explosives, which they decided to call in a special manner - atomic ... "

However, the Germans had their reasons to doubt. After all, when in May 1945, shortly after his arrest, Heisenberg saw his American colleague, Dr. Goodsmith, now representing American intelligence, he asked him bluntly whether the Americans were working on the same "atomic project"? Goodsmith answered emphatically, "No."

How could Heisenberg not believe him? Of course, all these reports about the mysterious atomic bomb are a complete hoax. This conclusion was reached by a general meeting in the dining room. However, Professor Harteck from Hamburg reminded the audience that the BBC had given specific information: the power of this incomprehensible bomb was equivalent to twenty thousand tons of TNT. Weizsacker, one of Heisenberg's young students, asked his mentor what he thought of these "twenty thousand tons"? He got confused. Reluctantly, as if not believing himself, Heisenberg repeated that the Allies were unlikely to have a "uranium bomb".

- And if they have it, you are all second-class physicists! - Gan threw biliously, rather trying to hide his anxiety than to annoy others. Professor

Heisenberg asked in annoyance, “Did they say the

word uranium?” Gan shook his head. “So

they had nothing to do

with atoms,” Heisenberg decided. Nevertheless, the seed of doubt was

thrown. Doctors Korshing and Wirtz started talking about the fact that the Americans must have obtained the uranium-235 isotope by diffusion - after all, they themselves planned such an experiment. The argument would probably have

continued well into the night if Max von der Laue, the Nobel Prize winner in 1914, had not interrupted his colleagues by reminding them that the final BBC news broadcast would be heard at 21:00. The dining room immediately emptied. The participants of the impromptu symposium settled down in one of the living rooms, where a loudspeaker was installed.

The announcer confirmed that it was an atomic bomb "dropped on one of the Japanese military bases ... According to eyewitnesses, even a few hours after the explosion, the city, which was home to more than three hundred thousand people, was still shrouded in a cloud of smoke and ash." It was further reported that the Allies spent £500 million on uranium work. A total of about 125,000 people took part in the work on the project. The last doubts have disappeared - across the ocean they really solved the problem that everyone present had been struggling with for many years. The

feelings that engulfed the scientists were of various kinds. They mixed horror, annoyance, indignation, remorse. Goodsmith, of course, led them by the nose in the same way as other Americans. When the Americans seized a secret laboratory in southern Germany in April 1945, they assured Weizsäcker and Wirtz, who were working there, that they would be allowed to continue their experiments somewhere else, and therefore they were asked to indicate the location of the uranium and heavy water reserves. The gullible professors easily agreed to hand over the valuable raw material. So that's what all this masquerade was for!

However, even here the German scientists were wrong - the Americans no longer needed either heavy water or uranium. They were worried about something else: they were afraid that these stocks would fall into the hands of the French, and above all Professor Joliot-Curie, who, according to intelligence, also conducted similar studies. And the Americans didn't want surprises...

* * *

It all started, perhaps, back in the 1930s, when in Paris Frederic Joliot and Irene Curie tried to obtain artificial radioactive isotopes of uranium by bombarding it with alpha particles (helium nuclei).

In 1934, the Italian physicist Enrico Fermi, conducting a similar experiment, replaces alpha particles with neutrons. Shortly before that, he discovered the moderation of neutrons in matter. According to the results of the experiments, Fermi comes to the conclusion about the existence of a number of "transuranium elements". At the same time, a physicist from Vienna, Lisa

Meitner, learned about his work. Two articles published in the journals "Nuovo Cimento" and "Nature" reported on the experiments carried out in Rome. She immediately turned to her old friend, the German chemist Otto Hahn. She suggested that they also do research on these strange "transuranium elements" that Fermi allegedly discovered.

At that time, Hahn worked at the Institute of Chemistry named after Emperor Wilhelm, located in Dahlem - one of the districts of Berlin. His assistant was the young chemist Fritz Strassmann, an expert in inorganic chemistry, an excellent analyst and radiochemist.

The research lasted four years. Meitner, Strassmann and Hahn confirmed the results of Fermi's work and discovered four new elements at once, which they temporarily called "eka-rhenium" (now it is neptunium), "eka-osmium" (plutonium), "eka-iridium" and "eka-platinum ". In the periodic system of Mendeleev, these elements are located directly under the cells where rhenium, osmium, iridium and platinum were inscribed. It seemed that their properties should resemble the properties of the elements we have listed. However, striking contradictions also emerged. Scientists have not yet attached much importance to this, hoping that everything will be cleared up soon.

In 1938 in Paris, Irene Curie and Pavel Savic 1, also following in the footsteps of Fermi and bombarding uranium (serial number 92) with neutrons, discovered a new radioactive substance. Its half-life was three and a half hours. At first they decided that they were dealing with an isotope of thorium (serial number 90). And they even prepared a theoretical explanation: the nucleus of uranium captures a neutron, becomes unstable and emits an alpha particle, turning into thorium. There was only one embarrassment. Until now, no one has been able to discover the emission of an alpha particle from the nucleus of uranium.

In those days there were heated discussions in Otto Hahn's laboratory. Scientists were annoyed by their success

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1 later, in 1971-1981, President of the Serbian Academy of Sciences and Arts - ed. ed.

Parisian colleagues. The most annoying thing is that back in 1934 Meitner proposed to obtain thorium in this way. The experiment was carried out by Strassman. He irradiated a solution of uranium, but then found no traces of thorium. Meitner now reproached him: he carried out the experiment carelessly, was inattentive, made a mistake, but the Parisians were successful. Strassman fought off the accusations. Perhaps Curie acted in some other way. After all, the message does not say anything about the order of the experiment.

It was decided to repeat the experiment. Strassmann again engaged in this, as if trying to make amends. And now, a week later, he already confidently told Meitner that the French could not detect thorium in a solution of uranium. There's something wrong here.

The Otto Hahn Institute immediately published the results of the experiments. Otto Hahn himself, together with Lisa Meitner, wrote a letter to his French colleagues, in which, setting out his own conclusions, he diplomatically asked if Irene Curie had made some mistake that fatally distorted the overall result. Now the Parisians were confused. Otto Hahn had been engaged in radiochemistry for more than thirty years and was considered an indisputable authority in this field. Curie did not consider it necessary to reply to this letter. But soon an article appeared in which she admitted that the substance she discovered was not thorium at all. In her opinion, a new transuranium element was found that resembled lanthanum, one of the rare earth elements, in its properties. But where, in what place of the table, would you order to place this "novelty"? The problem seemed insoluble for both physicists and chemists.

So, a new substance gradually crept into the possession of the Otto Hahn Institute, that is, “it was called a transuranium element.” I should have studied this uninvited alien more closely. In the autumn of 1938, Irene Curie finally

described the scheme of her experiment. Now it could be repeated. True, the Berlin group had suffered a heavy loss by that time. The Austrian passport no longer protected Lisa Meitner from zealots of racial purity, for such a state as Austria no longer existed. Meitner had to leave for Sweden. Her recent opponent Strassmann, after re-reading Curie's article, suggested that the French, who were not so well versed in the methods of radiochemistry,

might be mistaken in thinking that they had discovered a new element. In fact, in the solution they irradiated, “two different, already

substances known to us.

After listening to this, Gan laughed - the conclusion seemed so strange to him - but then added that there was something in it. Experiments were carried out in the laboratory for a whole week. In the irradiated uranium solution, traces of three new substances were found at once - the isotopes of radium and actinium, which arose as a result of the decay of uranium. At the end of 1938 Hahn and

Strassmann published the results of their work. Many of their colleagues disagreed with their findings. Does the decay of uranium produce radium? To do this, the uranium nucleus must expel two alpha particles, and yet it was fired upon with low-energy neutrons! Soon Professor Hahn visited Niels Bohr in Copenhagen and introduced him to his theory. The venerable scientist said that, in his opinion, uranium cannot expel two alpha particles in a row, this is "unnatural." The result of such experiments can only be "transurans". Lisa Meitner sent a letter from Stockholm warning her old friend that he was making a mistake.

Despite mockery and ridicule, Hahn and Strassman decided to continue their work. Strassmann proposed an elegant scheme: let's try to isolate the desired "radioactive substance" from a uranium solution using barium chloride. During the experiment, the chloride precipitates out as perfect crystals that do not contain any trace of the numerous transuranium elements that also occur in solution. But it contains a tiny amount of unfamiliar isotopes. They are recorded by Geiger counters. The neutron source was one gram of radium mixed with beryllium; neutrons were slowed down with the help of paraffin blocks (foreign scientists already had

cyclotrons at their disposal, which was much more efficient).

The experiment was difficult. Several hundred atoms of a new radioactive substance were lost among the huge amount of barium chloride crystals. To study these isotopes (“Is it really radium after all?”), I had to separate them from barium. For this, scientists

who have already resorted to the same method of fractional crystallization that was once used by Marie Skÿodowska-Curie. Hahn and Strassmann were absolutely sure of him.

However, now they were in for a surprise: they failed to detect a single isotope radium. Where did they go wrong? What is wrong, theory or practice?

The second decade of December 1938 was ending. Gan decided to conduct a control experiment. He took the solution and replaced in it the hypothetical "isotope of radium" with the radioactive isotope of radium already known to him - "thorium-X". Then he diluted the solution so that the radioactivity index was the same as in the previous experiment with "quasi-radium". Nothing out of the ordinary happened this time. Scientists have managed to separate several atoms of real radium from barium chloride. This means that the experimental design was correct. What did they get instead of "radium isotopes"? What is this mysterious substance?

December 17, Saturday, Hahn and Strassman repeated both experiments at the same time. This time, the same solution contained both the artificial "isotope of radium" and its natural isotope, "mesothorium-1." The latter served as an indicator. At each stage of this complex experiment, scientists took samples of the barium crystal and tested their radioactivity. The Geiger counter showed how gradually, from one stage of crystallization to another, the content of mesothorium increased. With the artificial "radium isotope" the situation was different. It was evenly distributed among the barium crystals, as evenly distributed as the barium itself.

That same evening, Otto Hahn wrote in his diary: “A striking picture of fractional crystallization of Ra-Ba-Msth 2".

He no longer had any doubts. The substance, which he at first considered an "isotope of radium", had nothing to do with radium. It was impossible to separate it from barium, which means that it was dealing with a radioactive isotope of barium itself. Thus, when the atoms

of uranium (the heaviest element on earth) were bombarded with slow neutrons, barium appeared - an element that weighed almost half as much. Under a hail of neutrons, uranium atoms "burst", "split", "split". So, using the most primitive equipment, which could not be compared with the instruments that the largest physical institutes of that time had, the German scientist Otto Hahn made an amazing discovery that almost became (and maybe will become) fatal for

of all mankind.

For several days Hahn did not tell anyone about his discovery - especially since he was also occupied with problems far from the world of physics. He needed to handle some of Lisa Meitner's business. He visited the Ministry of Finance and on Monday morning spoke with Carl Bosch, president of the Kaiser Wilhelm Society. He was worried about whether Meitner could rent out his apartment to one of his colleagues, Professor Matthauh.

Finally returning to the institute, Hahn, together with Strassmann, began to prepare a new experiment - it resembled the previous one, on Saturday. This time, scientists decided to find out the nature of other radioactive isotopes that arose during the fission of uranium. Until recently, he believed that these were actinium isotopes. He also tried to isolate them with barium.

Positioning himself near the Geiger counter, Hahn began to write a lengthy letter to Lise Meitner. After reporting on how her assignment was settled, Hahn then described the experiments he had set up with Strassmann. In conclusion, Hahn asked his old friend to try to find at least some physical explanation for his results. Then the three of us could publish a report on this discovery.

... Christmas was coming. On Tuesday, December 20, the annual Christmas party was held at the Emperor Wilhelm Institute. Otto Hahn felt uncomfortable on it. He remembered other Christmas evenings he had spent with Lisa. Now they were far apart. And he was also thinking hard about the results of the past few days. Loomed "very nice graphs." A written progress report had to be drawn up immediately before the institute closed for the holidays.

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2 radium-barium-mesothorium

In the next two days, the second part of the work was completed. The imaginary "isotopes of actinium" turned out, as Hahn expected, to be isotopes of lanthanum - an element, again, located in the very middle of the periodic table.

On December 22 Hahn and Strassmann hurriedly compiled a report on the artificial isotopes they had identified. “We, as chemists,” they reported, “should indisputably say that we are talking about isotopes of barium, and not radium; any other elements than radium or barium are out of the question.” And although this conclusion contradicted “all the provisions of nuclear physics known to us,” both “nuclear chemists” did not want to consider this conclusion final, they nevertheless hurried to publish the results as soon as possible. Professor Hahn called his old friend and editor of the journal Naturwissenschaften (Natural Sciences), Dr. Paul Rosbaud. That same evening, he rushed to the Institute of Chemistry. Hahn and Strassman had just finished writing a paper in which they argued that the nucleus of uranium "fissions."

Editor Rosbaud immediately appreciated the importance of the discovery. And although the nearest number The Naturwissenschaften was already ready for publication, he ordered that one of the materials be removed and replaced by an article by Hahn and Strassmann, dated "December 22, 1938", the winter solstice. On that day, darkness fell over the world. The uranium was split.

... In Sweden, on a visit to Lisa Meitner, her nephew, Dr. Otto Frisch, came for these holidays. He worked in the famous Copenhagen laboratory of Niels Bohr. On one of the holidays she received a lengthy letter from Germany. When she read it, she was amazed. Could it be that chemists of such a class as Hahn and Strassmann made a mistake? Yes, that cannot be! Why not tell Frisch about their problems and hypotheses?

Soon she was talking to Frisch about the "drop model" of the atomic nucleus proposed two years ago by Bohr. According to this model, the stability of the core was provided by "surface tension forces" that protected it from small deformations. And then Meitner mentioned the experiments of Otto Hahn. How to interpret them? The uranium nucleus contains a lot of protons, Frisch began to

reason. These equally charged particles repel each other, which weakens the binding energy of the particles in the nucleus. The uranium nucleus is unstable. As soon as he captures an extra neutron, then a small impulse of energy is enough to bring the atom out of balance. An atom, that is, one big “drop”, breaks into two almost identical “droplets” (two atomic nuclei). Each of the new nuclei is positively charged. They repel each other. According to Frisch's calculations, it turned out that with each such splitting, an enormous energy is released: about two hundred million electron volts.

On January 6, 1939, Hahn and Strassmann's article was published and caused considerable annoyance to a number of scientists who only now realized how close they were to discovery. Literally a step away from him, for example, Irene Curie stopped, who received a substance with a half-life of three and a half hours, and reminiscent of lanthanum in its properties. Was close to the discovery and their Berlin colleague, Dr. Droste. He was preparing to repeat the experiment, in which he intended to fix the alpha particles emitted - as it was then believed - by the nuclei of uranium and thorium when they were bombarded with neutrons. When conducting such an experiment for the first time, he used metal foil so that the results of the experiment would not be affected by low-energy alpha particles that leave uranium atoms during natural radiation. Because of this foil, at the same time, he did not notice the numerous fragments of "fissured" nuclei. Many years later, Strassmann got into a conversation with an American physicist - fate played a very cruel joke with him. A year before Hahn and Strassmann's discovery, this physicist bombarded a

solution of uranium with neutrons. He received "seemingly transurans", isolated them from the solution and carried the test tube with them into the next room to study the spectrum of their gamma radiation. As soon as he entered, the device would have noted with impeccable accuracy that the atoms of uranium had disintegrated into atoms of barium and other elements close to them in weight. But the floors in the laboratory were rubbed to a shine that day. The scientist slipped, fell to the floor, and with him the precious test tube fell down, shattered to smithereens. The laboratory, contaminated with radiation, was immediately shut down. She stood

sealed for more than one month. During this time, the physicist took up other work, and only the successes of his German colleagues reminded him that he could have made the same discovery much earlier. Otto Hahn, learning about this story, remarked that if Germany had followed the same strict rules for handling radioactive substances in 1938, he would never have discovered the fission of uranium at all. And yet,

empathizing with the unfortunate scientists, we recognize that Otto Hahn deserved his discovery. Only a radiochemist with such vast experience as he could have discovered a few hundred radioactive atoms, lost among the countless barium crystals. Only he could confidently assess the results of the work done, although they "contradicted all the provisions of nuclear physics known to us." I wonder what would have happened if World

War II had started in September 1938, when the Sudeten Crisis erupted? In those days in London they were preparing for air raids and were digging shelters, in France they announced a partial mobilization. What then? Probably, Otto Hahn would not have been able to publish an article about his discovery and - "a chain reaction begins" - the Americans would not have known about him. It is possible that then they would not have been able to create an atomic bomb and would not have used this formidable weapon. A discovery kept secret would save the lives of many

thousands of people. However, fate

decreed otherwise. Lisa Meitner and her nephew, Otto Frisch, convinced that Hahn and Strassmann were right, did not keep their discovery a secret. Returning to Copenhagen after Christmas, Frisch immediately went to Niels Bohr and told him about Otto Hahn's experiment. He explained to Bohr what consequences the release of the energy that is hidden in the atomic nucleus could have. Shortly after this meeting, Bohr left for the United

States for several months. In mid-January, Professor Josef Mattauch, a leading Viennese physicist, arrived in Copenhagen to replace the "indispensable Lise Meitner." He lectured in Scandinavia. Frisch met with him and introduced him to the energy calculations done by him and his aunt. Frisch said that, based on the principles of theoretical physics, they proved what Hahn discovered in the walls of a chemical laboratory.

On the same days, Frisch and Meitner, constantly calling each other, drafted an article for Nature magazine. It talked about the fission process (“nucleus splitting”).

On the twenty-third of January, unaware of Frisch's research, two Berlin physicists, Dr. Siegfried Flügge and Dr. von Droste, sent their paper to the Zeitschrift fuer Physikalische Chemie (Journal of Physical Chemistry), in which they came to the same results, that Frisch and Meitner.

And on January 26, Washington hosted the Fifth Conference on Theoretical Physics, organized by George Washington University and the Carnegie Institution. Niels Bohr spoke at it, reporting the details of the work of Berlin radiochemists known to him, as well as calculations of the energy released during the splitting of an atom. In conclusion, Bohr said, referring to the words of Frisch and Meitner, that such an experiment can be easily repeated using the simplest equipment.

Although Bohr's reports - with all due respect to him - were never particularly intelligible, this time, as soon as his last words subsided, a number of scientists immediately hurried - right in tuxedos! - to his laboratory in order to reproduce sensational experiments as quickly as possible. A few days later, American

newspapers were already full of reports of these experiments. When, finally, the articles by Frisch-Meitner and Flügge-Droste appeared in print, all the laurels - through the fault of Niels Bohr - were collected by other, more lively experimenters. A peculiar result of the first stage of the race of physicists was summed up by The Times. It was reported that an employee of Columbia University (USA) Enrico Fermi (by that time he had already moved to America) discovered a new physical process - “splitting of uranium atoms”. In his work, he used a Columbia University cyclotron that weighed 150,000 pounds.

But there was no respite after that. Already on

January 28, Otto Hahn and Fritz Strassmann were sent to the same Berlin magazine "Naturwissenschaften" new article. Judging by its title, they no longer doubted

the correctness of their results: "Proof of the appearance of radioactive isotopes of barium during the bombardment of thorium and uranium with neutrons." And the second part of the article again produced the effect of an exploding bomb: it provided "proof of the appearance of other radioactive fragments in the process of fission of uranium." What was the nature of these "other fragments"? According

to Hahn, to describe the splitting of an atomic nucleus, it is important to know not its mass, but its serial number. Thus, the nucleus of uranium (serial number 92) splits into nuclei of barium (56) and krypton (36). In this case, the nucleus emits a certain number of

neutrons. This fact was of key importance. Hahn and Strassmann cautiously assumed that the neutrons emitted from the fission of uranium nuclei would fission other uranium nuclei. There will be an avalanche effect. As a result, an incredible amount of energy will be released.

Poor Otto Hahn! Only a few days passed, and he realized what terrible and irreparable consequences his discovery could lead to. When the whole fatal meaning of the "chain effect" was revealed to him, he lost sleep. He could not sleep in anticipation of the catastrophe that was slowly approaching the world. There was no way to stop her approach. Each new discovery only accelerated its sinister course. Gan decided to commit suicide.

But his death would have changed little - the genie had escaped from

the bottle. In early March 1939, French physicists Joliot-Curie, Halban and Kovarsky experimentally prove the occurrence of a chain reaction. On April 7 of the same year, they report that the fission of one uranium nucleus releases on average 3.5 neutrons 3. At the end of the same month, an article by French physicists is published in the journal Nature.

In mid-April, during a colloquium on physics in Göttingen, Professor Wilhelm Hanle read to the audience a short article he had prepared for publication. It was about some kind of machine that uses the very energy that is released during the fission of uranium. Immediately after the colloquium, the scientist was approached by his boss, Professor Georg Joos, an authoritative specialist in experimental and theoretical physics. "Your discovery must not go to waste," he encouraged his assistant. Joos, a Prussian by

birth, could not even imagine that a scientific discovery, and even such a promising one, would not bring any benefit to the state. He immediately wrote a letter to the Reich Ministry of Education, to which the universities were then subordinate.

The Ministry reacted with astonishing speed. Professor Abraham Esau of Jena was instructed to call a conference at once. In fact, he was a specialist in high-frequency technology, and not a nuclear physicist, but on the other hand, he repeatedly showed political activity that was laudable at that time, “condemned and approved” in time, and who, if not this orthodox Nazi, should have comprehended the secrets of the atomic nucleus with a truly Aryan glitter? Moreover, the party, mindful of his merits, nominated Abraham to a high post, instructing him to lead the physics sector in the Research Council, created under the Reich Ministry of Education.

He zealously set to work, immediately writing down several names of scientists who were supposed to be present at the conference. In the first place, of course, was Otto Hahn. However, he, like a nimble neutron, slipped away from the networks of a diligent party member, citing the fact that he was expected in Sweden, where he had long been invited to lecture. He was replaced by Professor Joseph Mattauch. The

meeting took place on 29 April 1939 at the Ministry on Unter den Linden in the strictest secrecy. Present were Professor Esau (Chairman), Professors Joos, Hanle, Geiger, Mattauch, Bothe and Hoffmann, as well as Dr. Dames, who represented the

ministry.

The latter, in his speech, showed extreme dissatisfaction with the frivolous Professor Hahn, who trumpeted his discovery to the whole world instead of keeping it in strict secrecy in the interests of Germany. However, Mattauch, who had only recently found herself in the Third Reich and had not yet learned to be afraid, stood up so fiercely for his

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3 as it is considered now, 2.5 neutrons - approx. ed.

chief, that his hasty critics fell silent and reproaches against him were no longer received.

A business-like conversation ensued. Professors Joos and Hanle succinctly outlined the level of development of nuclear physics in Germany and in leading foreign countries, and also talked about how realistic the construction of an experimental uranium reactor is. Professor Esau recommended that all the uranium reserves available in the country be brought together. Now the export of any uranium compounds from the country was prohibited - especially since there was little of it.

At that time, its largest reserves were in Belgium, since its colony, the Congo, was rich in deposits of uranium ores. Thousands of tons of uranium were stored in the warehouses there. They should have been bought immediately.

In addition, we decided to create a research group, which will include all the leading Reich physics. Professor Esau himself was going to lead it.

At the end of April of the same 1939, the chairman of the British Scientific Planning Committee, Sir Henry Tizar, asked his government to prevent German purchases of uranium. On May 10, negotiations took place between G. Tizard and E. Senger, the general director of the Belgian company Union Miniere. However, they ended in vain - the Belgians were not going to miss their advantage; for once, a wholesale buyer for this little-needed uranium showed up. After all, until now it was bought only by universities for some research.

Meanwhile, Germany's nuclear machine was gaining momentum. When Mattauch returned to his institute, he was immediately attacked by two young theoretical physicists: Dr. von Weizsacker and Dr. Flügge. They were interested in all the details of the conference.

Baron Karl Friedrich von Weizsacker was then 27 years old. He has already managed to become famous, having developed a theory about the metamorphoses of chemical elements in the depths of stars. “The man is more ascetic than practical,” was how American intelligence officers later spoke of him. He was not a National Socialist, but he was well versed in the aspirations of the then authorities, for his father was an important dignitary in Ribbentrop's department. The young connoisseur of the stellar interior involuntarily knew more about the "deep currents" of politics than other scientists. Siegfried

Flügge told Mattauch that he had already written a popular article on nuclear energy, but was afraid to publish it. In the end, he nevertheless published his ideas in the June issue of Naturwissenschaften. The article was published under the title “Is it possible to use the energy contained inside atomic nuclei for technical needs?”

One cubic meter of uranium oxide powder weighs 4.2 tons and contains three thousand septillion (3 x 1027) molecules, or nine thousand septillion uranium atoms, it said. When each of these atoms splits, an energy equal to 100 million electron volts is released. So, one cubic meter of uranium oxide will be enough to throw one cubic kilometer of water, weighing about twelve trillion tons (12 x 10 12), to a height of 27 kilometers!

The only problem is that this incredible amount of energy is released at lightning speed, within a hundredth of a second. Is there any way to slow down this reaction? Can it be controlled in order to use the energy hidden in raw uranium for peaceful purposes? Flügge believed that in the future they would create a "uranium machine", enriching the water with cadmium salts, which would absorb excess neutron energy and keep it in the depths of the machine. Cadmium is a very strong absorbent. With it, you can even “turn off” the machine if the reaction gets out of hand. This article was followed by another published by Flügge in

August 1939 in the Deutsche Allgemeine Zeitung (General German Gazette). Both articles aroused great attention from the authorities. The tops of the country suddenly became interested in nuclear physics. But even a year ago, most scientists believed that nuclear

physics is of no practical importance. It was believed that in order to release the energy contained within the atomic nucleus, much more energy would have to be expended. Everything changed the discovery of Otto Hahn. ... The military immediately began to fuss. They also started

their own "atomic project". On the twenty-fourth of April, two days after the memorable publication in Nature, a young professor from Hamburg, Paul Harteck, and his assistant, Dr. Wilhelm Groth, wrote to the military

ministry. They reported that new discoveries in the field of nuclear physics would probably allow the invention of explosives of unprecedented power. Briefly, they outlined the essence of the research of Hahn and Strassmann and, mentioning the recent Joliot-Curie experiment, explained that the Americans, the French and the British attach great importance to the development of nuclear physics. In Germany, it is neglected. And in vain: "The country that achieves the greatest progress in this area will receive such an advantage over others that it will no longer be possible to equal it

The letter first got to General Becker, in the armaments department of the ground forces. From there he was transferred to the department of scientific research, which was headed by Professor Erich Schumann. Finally, he handed the letter to Dr. Kurt Diebner, a military specialist in nuclear physics and explosives.

At that time he was only 34 years old. He studied nuclear physics at the University of Halle (his supervisor was Professor Pose). In 1931 he defended his thesis on "Ionization under the action of alpha rays" and worked for some time in the laboratory of the Physico-Technical Society on the creation of a new accelerator. But in 1934 he was drafted into the army, and he ended up in the department of scientific research we mentioned. Together with Dr. Friedrich Berkei, he studied cumulative explosives commissioned by the Air Force. He, a nuclear physicist, did not really like his work, and he asked Schumann to create a new group in the department, which would deal only with nuclear physics. By that time, Dibner had already gained some notoriety in the field; about two dozen of his publications served as collateral. After reading the message, he turned for

advice to the famous scientist, Professor Hans Geiger, the creator of the well-known counter of ionizing radiation. He approvingly reacted to the thoughts of physicists unknown to him about the new explosive.

During the summer, Diebner read with interest both Flügge's papers, as well as a patent application filed by Stetter, a professor from Vienna, on the production of atomic energy. Thus, it did not take him long to understand the full value of the new idea and raise the corresponding noise in the military department. The result of his activities was the order to create a group for uranium research, which, of course, was headed by Dr. Dibner himself. Later, however, he recalled that it

was possible to quickly stir up the military only because a certain “Abraham Esau group” was created around their ministry, and this offended the generals. In fact, even in August 1939 they still did not believe that the army would benefit from this "strange science".

So Germany turned out to be the only great power where, on the eve of the Second World War, a scientific team was created that explored the possibilities of using atomic energy for military purposes.

However, in Germany, two scientific teams arose at once. One was headed by a military protege - Dr. Dibner; the other is a true Aryan and Party member, the enemy of the "sons of Abraham", Professor Abraham Esau. As expected, both became sworn enemies, hindering each other a lot in achieving at least some practical results. On Sunday,

September 3, 1939, Britain and France declared war on Germany in response to the invasion of Poland. The next day, Professor Esau met with General Becker, who assured him that he could rely on the support of the army. These studies are needed by the Reich. On the same day, Esau went to the Reich Ministry

of Economics, as the "atomic project" was suddenly threatened. The Air Force command suddenly decided to confiscate all stocks of uranium compounds and radium in order to make some kind of luminescent paints for their aircraft from this valuable scientific raw material. In order not to be unfounded before the minister, Ezau wanted to get an official paper saying how important the work of these scientists was for the fate of the country and that they could not do without uranium. Our R&D department could produce such a paper, Becker advised, unwittingly pitting the two competitors against each other. Professor Schumann, whom Abraham Esau and his assistant, Professor Meller,

tried to get an appointment with, turned out to be a hard-to-reach person. Finally, after soaking up all day

corridors, waiting for the "supreme expert", Ezau spoke with Dr. H. Basche, whom he accidentally met (as it turned out, Dibner's immediate superior). It was already evening, and the bewildered Esau, snatching from the folder the paper he had compiled during those hours, hopefully handed it to Basha. “Perhaps we can do without Schumann's signature, because the matter is urgent? Put only some squiggle so that I can safely show this document! On Thursday, September 7th, I have to submit it to the Minister of Economics!” Basche could only feign sympathy, explaining that "things like this don't get done so quickly." Ezau had to go home empty-handed. The next morning, Meller immediately began calling the "elusive Schumann." Soon, in the building of the Physico-

Technical Society, yesterday's compassionate interlocutor, Dr. Basche, appeared in person. Now Esau was not in place. However, the guest did not intend to wait, because the only thing he came for was to announce that Professor Schumann could not give them the coveted document. Can not! We will do uranium research ourselves! And point!

Thus began the first "atomic war" in the history of mankind. Luckily for us,
it is only in the "corridors of power".

Esau could not stand this "verbal slap in the face" and rushed to the Reich Ministry of Education in order to complain to his boss, Professor Rudolf Menzel. And he added fuel to the fire, saying that the command of the ground forces ordered to immediately stop all uranium research within the walls of the Physico-Technical Society. Esau could not understand anything. He did not yet know that he had stirred up a "hornet's nest." The military, excited by his pressure, actively set to work themselves. On September 8, Dr. Erich Bagge, a talented young physicist from the University of Leipzig, was drafted into the army, that is, into the Schumann department.

One can imagine the feelings that the young scientist experienced, holding in his hands - in the very first days of the war! - an odious yellow-brown package with an order to "immediately arrive in Berlin, at the disposal of the War Ministry." Taking a few family photographs with him and packing his underwear into a suitcase, Bagge prepared to be sent to the front. What joy seized him when, arriving at the mansion on Hardenbergstrasse, he met Dr. Dibner there, who explained to him what he would have to do.

In the days that followed, a number of young, promising scientists were "called into service". So, every cloud has a silver lining: work on the atomic project has saved many physicists from bullets, shells and bayonets. And now the

young "military expert" Bagge, together with Dibner, is preparing the first "combat operation". The army leadership decided to hold a secret meeting to discuss the prospects for the "uranium project". Two nuclear physicists, commanding their colleagues like an obedient army, draw up a list of scientists who should definitely be invited to the meeting. On a sheet of paper lying in front of them, the names of Professor Walter Bothe, Professor Geiger, Professor Stetter, Professor Hofmann, Professor Hahn, Professor Mattauch and Drs. Bagge, Flügge and Diebner line up in a column.

The meeting took place on 16 September. On that day, on the loose-leaf calendar that lay on Otto Hahn's desk, the following brief entry appeared: “Meeting at Schumann. Nuclear physicists were present, there was no Schumann. Compilation of the program. Esau called, announced his visit (Laue, Debye, Heisenberg)." Let's try to decipher this remark. "There was no Schumann." The

descendant of the famous composer was obsessed with two passions: physics and music. And the latter often prevailed despite the high position that Schumann held (and in addition to it, he also headed the department of military physics at the University of Berlin). So, he composed good military marches and got rich on it. The passion for music (and the dividends from it) became more and more fiery, causing malicious ridicule of enemies. Schumann Jr. often skimped on direct duties. We have already mentioned that the angry Esau did not find the professor hovering somewhere. In vain did the nuclear physicists wait for him. In his free will, Schumann would never have agreed to spend the whole day in their tiny circle, discussing their boring problems. After all, there is a specialist for this - Dibner.

Esau somehow accidentally found out about the impending "very important meeting with Professor

Schumann". He immediately cried to his boss, Menzel. He only assured the "inconsolable Abraham" that he was "in the know of what is happening." Esau felt himself gradually being pushed aside. However, if it seemed strange to some professors that their recent curator was simply not invited to the meeting, then they did not express these claims aloud. So the meeting began. Dr. Basche said

that, according to the German Foreign News Agency, uranium research is being carried out in a number of countries. Those gathered in the hall should evaluate whether the Wehrmacht needs such a project. This is not easy to do. However, even a negative result would be good for the Reich, for it would mean that our enemies would not be able to develop atomic weapons. If the result of the examination turns out to be positive, then we will be able to create either a powerful source of energy or a superbomb.

A lively discussion ensued. Scientists argued about what a "uranium machine" could be and how it would function. Just a few days ago, Otto Hahn began his speech, an interesting article by Niels Bohr and J. E. Wheeler appeared in the American journal Physical Review (by the way, very popular during the war years with German scientists). It said that the light isotope of uranium, U-235, is primarily fissile. However, in natural uranium, its content is negligible - only seven tenths of a percent! If we try to separate it from other isotopes (natural uranium consists of a mixture of three isotopes: U-238/99, 274%/, U-235/0.72%/ and U-234 /0.006%/ - ed.), we are faced with insurmountable difficulties. "Laue, Debye, Heisenberg". And what if we turn to Professor Heisenberg, - the newly-minted "military specialist"

Bagge recalled his mentor from Leipzig, - and ask him to develop the theory of "chain reaction"? Not everyone liked this offer. There has long been an unspoken rivalry between theoretical physicists and experimenters. It would be more accurate to say: they were at enmity with each other. Only experimenters were invited to this meeting, and then a certain young “upstart” intervenes and asks to “appeal for help” to this “armchair genius”! Professors Bothe and Hoffmann rose from their seats and declared that they did not want to deal with Heisenberg. You can do without it!

Later, when the meeting was over, Bagge approached Dibner and nevertheless begged him to call Heisenberg next time. No wonder they say that there is nothing in the world more practical than a good theory. And Heisenberg is an expert in such matters!

Scientists at the meeting did not decide which isotope is split when neutrons are fired at uranium. However, following Bohr, many were inclined to think that this was U-235. It would be a pure experiment to sort out the isotopes of uranium, fire them one by one and see what happens. The experiment was entrusted to Professor Harteck. He was already engaged in the separation of isotopes of various elements, including xenon and mercury.

The separation process - "thermodiffusion" - seemed to be simple. The installation consisted of two concentric tubes: the inner one was heated, the outer one was colder. The space between the tubes was filled with uranium compound vapors. In theory, the lighter isotopes (U-235) should have clustered near the warm surface. Everything seems to be clear.

Rather quickly, Professor Harteck came to the conclusion that the best way to sort uranium is to use vapors from one of its compounds, uranium hexafluoride. However, it was not easy to work with them. The gas behaved very aggressively. He corroded some of the materials from which the "diffuser" was made. Hardened at temperatures below 50 degrees. It also hardened in contact with many substances, such as water. I had to go to different tricks. But first of all it was necessary to extract this gas. For a normal experiment, one liter of it was required, that is, only 12 grams. On September 25, Harteck wrote a letter to Professor O. Ruff, the man

who described the properties of uranium hexafluoride. Harteck asked for a liter of this rare gas. The leaders of the IG Farbenindustri concern, who were contacted, pondered for about two weeks. Finally, they offered to send them 100 grams of uranium - from it they will make the necessary

gas.

On the same day, September 25, Dr. Bagge spoke with Heisenberg in Leipzig. They discussed what kind of instrument should be used to measure the number of neutrons released during

fission of uranium.

Bagge returned to Berlin the next day. He was waiting for a new meeting in the armaments department of the ground forces. Now he was clearly aware that there were two ways to extract energy from uranium. Either an uncontrolled reaction, that is, an explosion, a bomb, or a controlled process and a uranium reactor. To make the process manageable, you need to mix uranium with some substance that will slow down the fast neutrons emitted at the time of nuclear fission, but not absorb them. So, you need a "retarder". And to create a bomb, it is necessary to isolate a rather rare isotope of uranium - U-235, since when it is bombarded with neutrons, a chain reaction of fission of uranium nuclei begins. There is an explosion. Meanwhile, in Hamburg, Professor Harteck was talking to his assistant, Dr. Hans Suess, while waiting for the grams of uranium to be

released. Once he spoke about "heavy water": he thought that, creating a uranium reactor, it could be taken as

"retarder".

- Nothing will come of it! Hartek interrupted him. He

instantly remembered his own deplorable experience. Five years ago he was an intern at Rutherford's lab. And the first task that the meter gave him was precisely to obtain a meager amount of heavy water for some experiments. Oh, and he suffered then! In the end, Harteck came up with a tiny (30 cm high) electrolytic cell. For many weeks, he passed countless amounts of water through it, until finally he got the required fraction - a few cubic centimeters of heavy water. “Do you know,” he asked Suess, “how long it will take us to make several tons of this water?! For many years, or even decades... But the reactor needs exactly tons of it. Will the government agree to finance such a wasteful project?..

Nevertheless, going to a meeting in Berlin, he scribbled an article about the use of heavy water "to avoid resonant absorption in uranium-238." His most important ideas were as follows: heavy water ideally slows down neutrons; uranium fuel and heavy water should be placed in the reactor not mixed, but in separate layers. With these

thoughts he

and shared with colleagues.

At that meeting, future plans were discussed. First, one must learn to separate the light isotope of uranium (U-235) from its other isotopes. Secondly, to determine the "effective cross section" of the atomic nuclei of all those substances that can be used as a "moderator" (that is, to determine the probability of capture by these nuclei of neutrons flying towards them; the value of this cross section can be compared with the size of the target in dash - the more target, the more likely it is to hit). Thirdly, to understand whether a uranium reactor can operate on slow neutrons. Next, the roles were assigned. Heisenberg studies the theoretical foundations of a chain reaction. Bagge returns to Leipzig,

investigates the "effective cross section" of deuterium. Professor Harteck completes the "thermal diffusion" of the uranium isotope U-235. Other scientists also received various assignments. Everyone was promised that "there will be money for this."

In conclusion, Professor Schumann (this time he did not manage to exchange physics for music) announced that the Emperor Wilhelm Institute of Physics, located in the Berlin district of Dahlem, was transferred to the jurisdiction of the armaments department of the ground forces. The institute has excellent equipment. All scientists working on the "uranium project" will be transferred there. They will be collected, so to speak, "under one roof." This idea in itself was good. But what do you want to do with pride? How to hide it "under

one roof"? How to force the “provincial luminaries”, idolized in their own cities of Hamburg, Leipzig, etc., to move to the Berlin “golden cage”, where their image will obviously fade from contact with many such “geniuses”, “talents” and etc., etc. The idea of a "scientific sharashka" in the German manner was met with hostility. Everyone wanted to work on a well-funded project, but they still flatly moved to Berlin

refused.

Harteck wrote to the head of the armaments department: “I need to stay here in Hamburg ... In

If necessary, I can come to Berlin every week for a few days. It can be understood: at that time, the train from Hamburg to Berlin traveled in just two hours. Other leading scientists representing Heidelberg, Munich, Vienna, would have to spend much more time on the road, but they did not want to break away from their homes. However, the problem of unifying the luminaries could wait for

now. To begin with, it would be nice to get enough uranium for experiments. The Berlin company "Auer" was engaged in the processing of rare earth metals. Army officials turned to her with an unusual request: they need to produce several tons of pure uranium oxide. They were sent to the central laboratory, which was headed by Dr. Nikolaus Riehl, 38 years old, a native of St. Petersburg, a student of Hahn and Meitner. When Germany invaded Czechoslovakia in 1939, Auer was one of the first to develop the uranium mines there. At that time, everyone was

interested in radium. Uranium was considered a by-product, but the firm had some stocks of it in the form of uranium oxide and crude sodium uranate. Dr. Riehl immediately appreciated the prospects of the project and personally took up the purification of uranium. He will do this until the end of the war. In just a few weeks, Riel set up uranium production at a small factory in Oranienburg. About a ton of purified uranium oxide was produced here every month. The first ton was shipped

to the military in the first weeks of 1940. Prior to this, the unforgettable “Aryan and

party member" Abraham Esau. Now it has ceased to be a monopolist.

And if we take into account that one after another those few "orthodox" physicists were called up to the army that had not yet left the Esau "clan" - Joos, Hanle, Mannkopf - it became clear: Esau's star had set. And when he again came to cry to his boss, Menzel met him coldly. According to him, it turned out that the military had been engaged in a “uranium project” for many years, and Esau was stealing their ideas.

On the same day, the scientist wrote an angry letter to General Becker, swearing and swearing that the point was not that this or that department should conduct uranium research alone, not allowing anyone to them. It's best to work together. It was he, Esau, who hastened to stock up on uranium, it was he who first became interested in the properties of uranium, and now work on his project is interrupted "in the most cruel way", using the possibilities available only to the military department. It's not fair...

However, the complaint had a peculiar effect. The patience of General Becker, who read the letter, eventually snapped. Esau, deprived of his "faithful", was now "robbed". His uranium stocks were confiscated and turned over to institutes in Dahlem. And work on the project has finally begun. In early December, Bagge, who was walking along

the institute corridor in Leipzig, was called by someone. It was Heisenberg. He hurriedly led the young scientist into his office and began to say that he understood how to stabilize the chain reaction, immediately drawing a couple of formulas on the board. As was clear from them, as the temperature in the reactor increased, the effective cross section would decrease. At a certain temperature, the reaction will automatically slow down. This temperature depends on the size of the reactor. Apparently, we are talking about hundreds, not thousands of degrees Celsius. As the example shows, if you take 1.2 tons of uranium and a ton of heavy water, mix them in the form of a paste and place them in a ball with a radius of 60 cm, the reaction inside such an aggregate stabilizes at eight hundred degrees Celsius.

On December 6, Heisenberg reported to the Army Ordnance Department that Harteck's proposal to separate the uranium from the moderator was not very successful, since the reactor will be too small.

The last part of this memorandum is curious: “The possibility of technical use of the energy obtained from the fission of uranium. Here is its summary.

According to available data, the uranium fission process discovered by Hahn and Strassmann can be used to produce energy. The most reliable method is the enrichment of the uranium isotope U-235. Only this will make it possible to reduce the size of the "uranium machine" to one cubic meter, will make it possible to create explosives whose power will exceed the power of explosives known to us by a thousand times.

However, ordinary uranium can also be used to produce energy without resorting to the separation of its isotopes. To do this, you need to add to uranium a substance that can slow down the emitted neutrons without absorbing them. Water doesn't work here. According to our information, only "heavy water" and refined coal meet these requirements. However, at the slightest pollution, energy production will stop. In conclusion,

Professor Heisenberg warned that the reactor was a very intense source of harmful neutron and gamma radiation. It is known that heavy water is water in which

ordinary hydrogen atoms are replaced by deuterium atoms, its heavy isotope (in addition to the proton, their nuclei also contain a neutron). "This water" is about 11 percent heavier than regular water; it freezes at 3.81 and boils at 101.42 degrees Celsius. But most importantly, it slows down neutrons to such a speed that U-238 isotopes of uranium cannot trap them, but these neutrons are still capable of fissioning U-235 isotopes.

On the eve of World War II, the only company producing heavy water in "industrial quantities" was the Norwegian "Norsk-Hydro". It operated at the Vemork hydroelectric power station, near the town of Rjukan in southern Norway (the station, which generated 120,000 kilowatts of cheap electricity, was located next to the giant Rjukanfoss waterfall). Heavy water was a by-product of hydrogen electrolysis.

Back in 1932, the American scientist G.K. Urey proved that the water remaining in the cells after electrolysis contains much more heavy hydrogen than usual. If 100,000 liters of water were electrolyzed until only a liter of water remained in the cells, that liter would have a heavy water content of 99 percent. According to this principle, Norsk-Hydro produced heavy water. Its purity reached 99.5 percent. A German scientist sent to inspect this installation shortly after the occupation of Norway called it "a masterpiece created by the work of Norwegian scientists and engineers."

The plant began operating in 1934. Until 1938, only 40 kilograms of heavy water were produced here. Then its production increased, but even at the end of 1939, no more than ten kilograms of water per month were produced here. However, the German military had no choice. After all, the capacity of the largest hydrogen electrolysis plant in Germany did not exceed 8,000 kilowatts. The question

was only whether the Norwegians would agree to supply heavy water to Germany? In the

meantime, the military authorities began to carry out their own decision to transfer the Institute of Physics in Dahlem to their jurisdiction and immediately ran into a problem. "There is a person - there is a problem." This man was the director of the institute, the famous Dutch experimental physicist Peter Debye, winner of the 1936 Nobel Prize. A foreigner could not lead a secret German project. It was against all principles. The great scientist was faced with a choice: either take German citizenship or leave the institute. An unexpected invitation from the United States resolved the dilemma. The scientist, who had lived in Germany almost all his life, was asked to give a series of "lectures". In 1940 Debye moved to America and never returned. So the German nuclear project lost its first valuable

employee. Schumann also proposed to appoint his protege, Dr.

Dibner, as director of the institute. But here the new president of the Emperor Wilhelm Society, Albert Fögler, opposed. Is it possible to compare some Dibner with Debye himself? In the end, he was appointed temporary "authorized director" of the institute in Dahlem - "for the duration of Debye's absence." So there was a split between the "imposter Dibner", on the one hand, and the

"teacher Heisenberg" and his numerous retinue, on the other hand. This split among German physicists did a lot of damage to the common cause and slowed down work on the "uranium project".

In the meantime, in July 1940, next to the Institute of Physics, on a site owned by the Institute of Biology and Virus Research, a small wooden laboratory began to be built. Here they were going to place the first "subcritical" uranium reactor in Germany. To scare away uninvited guests, they hung over the doors of the building

"Laboratory of viruses" sign.

Already in the first war winter, it became clear to German scientists that their work would not be limited to the construction of a uranium reactor. Ahead of them is waiting for a "uranium bomb". It is necessary to create a reactor for two reasons: firstly, then scientists can test the theory with practice, and secondly, and more importantly, if it is possible to build a reactor, then both the government and the Wehrmacht will be convinced that scientists can handle the creation of a bomb, despite those enormous difficulties th became more and more aware.

In the next two years, scientists hardly thought about the bomb. All their thoughts were occupied with the immediate, albeit intermediate, goal: a uranium reactor. This does not mean at all - as some historians sometimes try to convince us - that the Germans did not think about creating a "superbomb" at all. No, they just preferred to gradually go from victory to victory. True, looking back at the path they traveled, we can express it differently: "From defeat to defeat."

The first meetings held in Berlin showed that there are two ways to act. First, to act empirically: by randomly changing certain moderators, changing the fuel layout, choose the best option. This method has its advantages, but much here depends on chance. Another way is based on theoretical research. We can judge in advance how the chain reaction of fission of uranium nuclei will proceed. To do this, we need to know, for example, the "effective cross sections" of various materials at different rates of neutron bombardment. Such indicators can be measured in advance, although this is time-consuming and requires special skill. But for such measurements, tiny samples of material are needed, which is important in 1940, when Germany was short of uranium, heavy water, pure carbon and beryllium. In the end, German scientists, like their Western counterparts, chose a third path. They tried to combine both methods, acting either on theory or at random.

In 1940, a number of important experiments were carried out in various German laboratories - in Leipzig, Berlin, Heidelberg, Vienna and Hamburg. So, in the summer and autumn of 1940, Heisenberg and Depel (together with his wife) set up experiments with uranium oxide and heavy water. It appears that a heavy water reactor can use ordinary uranium rather than enriched U-235.

No less important is the experiment of Professor Bothe from Heidelberg, carried out in June 1940. It shows that absolutely pure carbon can also be used as a moderator, and it is much easier to obtain this substance than heavy water.

In Berlin, at the Institute of Physics, Weizsäcker and his assistants began to design a future reactor. At the end of February, they decided to build it "according to Professor Harteck's scheme": two tons of uranium oxide and half a ton of heavy water will be mixed, in five or six layers. The height of the reactor is 70–90 centimeters.

It was possible to build a spherical reactor, although it is much more difficult. But it requires less fuel and heavy water: 1.2 tons and 320 liters. By the way, calculations have shown that if any reactor is covered with a reflective shell of carbon, neutrons will not leave it, and the dimensions can still be reduced.

However, in February 1940, Heisenberg, returning to the memorandum filed two months earlier, supplemented it with a detailed mathematical calculation. Unfortunately for German science, he came to the conclusion that using pure graphite as a moderator was not at all as effective as it seemed at first. Helium is also not suitable, because the reactor will be too bulky. What remains is heavy water.

Dibner held a meeting at which all the problems associated with heavy water were discussed. Heisenberg, the physicist Karl Wirtz, and the physical chemist Karl Friedrich Bonhoeffer who participated in it concluded that there were still many difficulties ahead. Heisenberg suggested that we first take a couple of liters of heavy water and check how permeable it is to neutrons. Dibner promised to buy a bucket of heavy water from the Norwegians. Only after making sure in practice that it is suitable for the operation of the reactor, it was worth starting the construction of our own installation for its release. A week later, Harteck sent a letter to his military chiefs: judging by the calculations

We will need Heisenberg, uranium and heavy water for the reactor in equal proportions, that is, we need to get about two tons of heavy water. And here there is no hope for the Norwegians. We need to organize its production ourselves. However, to

obtain just one ton of heavy water using electrolysis, as the Norwegians do, hundreds of thousands of tons of coal will have to be used to generate electricity. The military was horrified by this picture. Then Harteck remembered that

a few years ago, together with Süss, they had developed a new method for the production of heavy water using catalytic exchange. However, then he did not interest anyone, since it was easier to buy heavy water for laboratory experiments from the Norwegians. Now it's a different matter. It seems that it will be cheaper to extract heavy water in this way than by electrolytic method.

Soon, with the consent of the military, they decided to build a pilot plant. Harteck wrote to Bonhoeffer that he would like to locate the catalytic exchange plant at some existing hydrogenation plant. At the end of February, he received a reply letter. It said that the famous Leinaverke factory was "very interested in this idea." From a technical point of view, no problems were foreseen, "it's just a catalyst."

In the meantime, a representative of the IG Farbenindustri concern arrived in Norway, who, with his cash injections, contributed to the work of the factory in Rjuken. But he was not interested in current affairs and not in financial reporting - a representative of the almighty concern appeared to demand from the Norwegians all the reserves of heavy water stored in them: 185 kilograms with a purity of 99.6 and 99.9 percent. “Further on,” he seduced the leaders of the company, “a new extensive order will follow. The only difficulty is that further we will need not 10 kilograms of water per month, but as many as 100.”

Surprised interlocutors timidly asked why such huge reserves of heavy water were needed at that time. However, the German deftly evaded a direct answer. The Norwegians did not like all this, and in February 1940, the leaders of Norsk-Hydro officially informed their German partners that, unfortunately, they would not be able to fulfill such a large
order.

Apparently, they began to suspect why the Germans needed so much heavy water. Indeed, back in the summer of 1939, F. Joliot-Curie was finally convinced that a chain reaction of fission of uranium nuclei is possible. Moreover, he created a model of a uranium reactor, consisting of blocks of uranium oxide immersed in ordinary water, which should serve as a "moderator" of neutrons. However, the water mostly absorbed the electrons rather than slowed them down. In February 1940, Joliot-Curie learns that 185 kilograms of heavy water is stored in the warehouse of the Norwegian company Norsk-Hydro, and appeals to the Minister of Arms of France, Raoul Dautry, with a request to purchase these water supplies for conducting the most important experiment. And she was sent to the French. So, when German troops

invaded Norway in the spring of 1940 and after heavy fighting on May 3 captured the factory, its warehouses were empty.

No ice, no uranium...

At the beginning of April 1940, while the French physicists were finally beginning to experiment with the heavy water they had worked so hard to obtain, Paul Harteck visited the Leinawerke plant. He caught fire with a new idea and hurried to talk with Dr. Herold, director of the plant for scientific work and an ardent National Socialist. “In my reactor, the uranium oxide

will be placed in dry ice,” Harteck reasoned. - Dry ice or solid carbon dioxide is easily processed and stored for a relatively long time at a temperature of minus 78 degrees, evaporating slowly. Thus, during fission, uranium will not heat up much ... Harteck was known as a brilliant experimenter. In the early thirties he worked for some time in

Rutherford's laboratory. In 1934, together with E. Rutherford and M. Oliphant, he discovered tritium, a radioactive isotope of hydrogen with a mass number of 3.

Returning home, he was horrified when he realized how badly the experimental work was done in German laboratories. “We are

inferior to the British in all respects, and if we want German science to retain its leading position, we must catch up,” he said bluntly.

colleagues.

This conclusion offended many Germans, who believed that "Germany is above all", and they, on occasion, were ready to put a spoke in the wheels of a critic.

But here Hartek was lucky. Dr. Herold, defying intrigue, offered the researcher, who looked like a true Nazi (the scientist wore the same mustache as the Fuhrer himself), a whole car of carbon dioxide, and even for free. So, there were no

problems with dry ice. Harteck had already chosen the basement in which he wanted to conduct the experiment, but the uranium had to be taken care of as well. He asked Dibner to send between one hundred and three hundred kilos.

At the same time, seduced by the opened prospects, the scientist did not take into account one thing: he was not the only one who dreamed of building the first uranium reactor in the country. In the spring of 1940, applications flocked to Dibner "like kites." Heisenberg solicited a whole ton of uranium oxide. Dibner, like a negligent schoolboy, reported to the venerable professor: “Now we have only 150 kilograms, by the end of May there will be 600 kilograms, and only by the end of June we will get a ton.”

In order to save money, the cautious Dibner hinted to Heisenberg that it would be a good idea for him to experiment with Harteck. However, the Nobel laureate, not wanting to part with his plans, condescendingly noted the haste with which his young colleague tried to test his own hypothesis:

> “Your experiments must be preceded by the necessary measurements, and I myself would like to do them,” Heisenberg wrote. “I ask you to be satisfied with only one hundred kilograms for the time being.” Heisenberg himself was also ready to make sacrifices for the success of his colleague and, having abandoned a ton of uranium oxide, he obtained only a few hundred kilograms from Dibner.
>
> Harteck grew gloomy as he slipped from one line of the letter to the next. In the coming weeks, he will receive ten tons of dry ice free of charge. A great gift from a good-natured engineer! Later, in the middle of summer, dry ice is no longer so easy to get. Since June, all its stocks have been delivered only to food warehouses, and then the dream of a reactor "will split into the rough prose of life." What preliminary measurements, accessible only to him alone, does Heisenberg speak of?
>
> Professor Knauer, my assistant, had already prepared for them, Harteck replied to his opponent. “Only the 38th preparation is missing 4 to set up a decisive experiment. We hurried with all our might, we made all the necessary preparations, because dry ice will not lie with us for more than a week. Therefore, it is extremely important for us to receive uranium oxide in the period from May 20 to June 10.” And it needs as much as possible! “Because,” Harteck revealed, “I only asked Dibner for 100 to 300 kilograms, because I didn’t suspect that he might have even more uranium oxide.” “You
>
> understand,” he assured his colleague and rival, “that the more convincing the results of the experiment, the more preparation we use, and therefore I will be very grateful to you if ... you manage to get as much oxide as possible.”

In early May 1940, the place for the future reactor had already been prepared. Despite the intrigues of Heisenberg, everything turned out well. Dibner did promise "several hundred kilograms" of uranium oxide. Yet, insuring himself against "confusion", Harteck asked the faithful Herold to delay the shipment of dry ice "as long as possible." On May 6, he called Dibner and said that for a normal experiment, at least six hundred kilograms of oxide were needed. On the ninth of May, languishing with anticipation, he wrote a letter to Dibner, hoping to find out how much longer he would have to wait. It was only in the last days of May that the coveted oxide was brought to Hamburg, but

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4 i.e. uranium oxide - approx. ed.

it turned out to be negligible. The words of the parting note sent by Professor Pose were mocking: “On behalf of the armaments department of the ground forces, we are sending you today 50 kilograms of oxide of the 38th preparation. Heil, Hitler! Dream, Harteck, dream!

However, a few days later, the

compassionate Petersburger Riel sent the “Hamburg
dreamer "another 135 kilograms" from myself personally. But on that "uranium trickle" dried up.

Thus, at the beginning of June, Harteck's laboratory had 185 kilograms of uranium oxide and 15 tons of dry ice. The professor made a block of ice measuring 180 x 180 x 200 centimeters, drilled five shafts in it and filled them with uranium. A radium-beryllium neutron source was placed in the middle of the block. On the 3rd of June, he notifies his military chiefs, masters of "professional leveling", that within a week the experiment will be completed.

At the same time, he kept silent that it was actually pointless to carry out the planned experiment with such a small amount of uranium - the chain reaction would not start. This whole week of "careful measurements" was only a demonstration of ambition. Harteck managed to measure only the level of absorption of neutrons in uranium, and even their diffusion length in solid carbon

dioxide. At the end of August 1940, he hinted that the experiment should be repeated, this time taking two tons of uranium oxide and a huge five-meter cube of dry ice. However, his colleagues slandered his plans so much that the “stubborn critic” faltered and swore to conduct a new experiment. Such an important

undertaking was ruined by the simple opposition of the "true scientists".

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Meanwhile, across the ocean, things were like this. On March 17, 1939, in Washington, E. Fermi meets with employees of the Naval Ministry and explains to them that the Germans can create a new type of weapon - an atomic bomb. He was politely listened to, and nothing more. Then he turns to his colleagues and after a series of consultations on August 2, 1939, Einstein, Fermi, Szilard and Wigner send a collective letter to US President F. Roosevelt, in which they report the possibility of making a new type of bomb capable of destroying entire cities. And again - no answer, no hello ...

On March 7, 1940, egged on by his colleagues, Einstein sent a second letter to Roosevelt. But things got

off the ground only at the end of April 1940, when Peter Debye arrived in the United States and spoke about the circumstances of his scandalous dismissal. A few days later, the New York Times published a lengthy article on the "uranium project" in Germany. It was kept in the darkest tones. In May 1940, it became known in London that the Germans intended

to increase the production of heavy water at a factory in the Norwegian city of Rjukan to one and a half tons annually. Experts tried to calculate the possible damage in the event of a German "superbomb" explosion in one of the major English cities.

In June 1940, German troops occupied Paris. Diebner and Schumann arrived immediately. Now they are standing in front of the doors of Curie's laboratory. What awaits them there? The door swung open. Before them was the cyclotron, the embodiment of the German scientific dream. American cyclotron, mounted, however, half. How he was missed in Berlin! As for his former masters, all of them,

"racing with the German advanced units," hastened to leave Paris and were now in England. Only Joliot remained in Paris. Dibner met with this heir of the Curie clan, and he, in gloomy impotence, listened to the "fresh scientific news": German scientists were going to debug the cyclotron and conduct experiments on it. He himself refuses to take part in them. However, in July, the "Paris group" of physicists under the leadership of Professor Wolfgang Gentner nevertheless gets to work. In hot pursuit, the Germans tried to restore the progress of work in the Curie laboratory. Some finds could become important arguments in

German scientific disputes. For example, the French, like Harteck, believed that "uranium fuel and heavy water should be placed in

reactor not mixed, but in separate layers. In their opinion, the moderator substance should be introduced into the uranium mass in the form of "cubes or balls", and not vice versa. So, they got very encouraging results when they introduced paraffin cubes into a ball of uranium oxide (paraffin also serves as a good moderator). Other experiments were also planned: with graphite and heavy water moderators.

So, a year and a half has passed since Hahn and Strassmann discovered the chain reaction. During this time, German nuclear physicists have achieved considerable success in their work on the atomic project. They already had thousands of tons of uranium compounds; in their possession was a factory for the production of heavy water, although its warehouses were empty; they had a cyclotron, albeit unfinished; Germany's chemical industry was the world's leading; finally, the best physicists, chemists and engineers of the country were involved in the work. On June

15, 1940, the American journal Physical Review published an article announcing the discovery of a new transuranium element (later called plutonium). The article caused indignation among prominent British scientists, who believed that in wartime the publication of such materials should be prohibited. And to some extent they were right - the published article caught the eye of Weizsäcker. Baron Carl Friedrich von Weizsäcker used to take the latest issue of the Physical Review

with him when he left home. Sitting on a seat in the subway, he unfolded a magazine to the great horror of his vigilant neighbors, who looked at how in military Berlin a certain suspicious foreigner, in the guise of a spy, was calmly reading the enemy press without fear.

So, on one of the July days, he had in his hands a magazine just received, a month ago, in which his attention was attracted by an article on the discovery of plutonium. He ran her eyes again and again, feeling how consonant the conclusions of his overseas colleagues were with his own recent guesses. A new transuranic element can be obtained from the uranium isotope U-238.

> “So we can turn this isotope into a new ‘transuranium’, and then, using the simplest chemical methods, separate it from U-235 …“ The new element, as he explained in a note filed with the Army Ordnance Department, can be used in three ways , including "as an explosive".

In May 1940, Professor Harteck not only bombarded Berlin with requests to send some uranium, but also prepared to conduct an experiment to separate the isotopes U-235 and U-238. Recall that for this he needed uranium hexafluoride - an unusually aggressive gas. He corroded some of the materials from which the "diffuser" was made. It was necessary to find out which metals withstand contact with it, and which are destroyed.

During the experiments, samples of steel, nickel and other metals were exposed to this gas for 14 hours at a temperature of 100 degrees Celsius. At the end of the experiments, the samples were weighed again. The weight of nickel did not change at all, which means that it did not corrode. The experiment was repeated already at 350 degrees, but the metal passed this test too.

One thing was upsetting: at that time nickel was not available in Germany. It was mined in Canada, Australia, in the French colonies, but not in the allied countries. Another grimace of fortune! What to do?

On June 10, the leaders of the atomic project turned to the Munich professor Carl Clusius (it was he who developed the “thermal diffusion” method we were talking about). So, he was asked whether it is possible to replace uranium hexafluoride - a gas that is in no way suitable either for industrial use or even for experiments - with some other volatile uranium compound? Eight days later the answer came. The professor could only recommend uranium pentachloride - whose disadvantages, however, include

properties even more intolerable than those of uranium hexafluoride.

There seems to be no substitute for this harmful gas. At the plant of the concern "IG Farbenindustri in Leverkusen undertook to build a plant for the production of hexafluoride. Ruthlessly

dispelling former dreams, Karl Clusius hastened to reassure the military.

"At the present level of our knowledge of volatile uranium compounds, we should expect serious success only if we abandon gaseous compounds, replacing them with liquid ones." The professor himself volunteered to develop a new method of isotope diffusion.

At about the same time, the "liquid" method was also proposed by the physicist from Heidelberg R. Fleischmann. An aqueous solution of uranium nitrate is mixed with a solution of the same nitrate in ether. As the theory shows, the light isotopes of uranium (U-235) will remain mostly in the ether. Now, with the help of simple physical methods, you can isolate them.

In October 1940, a special conference had to be held in Leipzig to discuss the many difficulties that arose in the separation of uranium isotopes. W. Walcher described the electromagnetic method: tiny amounts of isotopes can be isolated using a mass spectroscope. H. Martin spoke of an "ultracentrifuge" which he wanted to use in his Kiel home. Gradually, from the reports of the participants, it became clear that German scientists could not yet offer a reliable method for obtaining the U-235 isotope in industrial quantities.

In many respects, the attitude of the authorities towards science also interfered. It, as it happened more than once, in different eras and different countries, was wary and dismissive. In the European theater of war, the Wehrmacht won one victory after another. For these brilliant victories, he did not need either a "superweapon", or a "superbomb", or a "wonder reactor". A simple, proven weapon brought success. Why spend money on some mysterious experiments? "Everything for the front, everything for victory" - this familiar slogan hovered in the minds of the German leaders as well. For scientists, this

ceremonial motto turned into a different side - the gloomy resolution "Nothing for science!" What equipment the scientific laboratories had on the eve of the war, they were content with that. Scientists could only be glad that they were not being escorted out to storm some Norwegian city of Rjukan.

However, with their scientific arsenal, it was no easier to storm the secrets of the atom. In Germany, there was no ready-made cyclotron - the main weapon of nuclear physicists. The same Americans received plutonium only with the help of a cyclotron. Back in 1938, the Institute of Physics in Heidelberg, which Bothe was in charge of, placed an order for a cyclotron, but acquired it (let's jump ahead) only in 1943. How was it to keep up with the Americans? Poor science will lose every battle! At the beginning of 1940, Baron Manfred von

Ardenne, a brilliant technician, turned to Professor Philipp, one of Otto Hahn's assistants who was in charge of his instruments, and offered to meet with Goering and persuade him to help in some way in the construction of the "plant for the transformation of atoms." What do you! It's tactless to address him, bypassing the leaders of the Society named after Emperor Wilhelm. Each case needs its own subordination, although what can you do if the Minister of Education Bernard Rust himself does not understand at all how important nuclear research is? So, starting with respect for decorum, Professor Philip ended his monologue with a completely obscene indignation.

Then Baron von Ardenne, who was not distinguished by particular scrupulousness, rushed to the Minister of Posts Onesorg (he learned that the ministry has a large and abundantly funded research department). In the most general but significant terms, he explained to the Minister that, thanks to the recent discoveries of physicists, special bombs and special reactors could be made, and that the Americans were already going to install these reactors on their ships instead of the usual steam engines.

The excited minister, who had lagged behind his enlightened age, was so carried away by the speeches of the correspondent baron that at the first opportunity he appeared with a report to Hitler and told him everything he had learned about the uranium bomb.

However, at the end of 1940, when this memorable event happened, the Fuhrer was so engrossed in the joys of recent blitzkriegs and plans for future wars that this - in his opinion, eccentric - report of the Minister only annoyed him. The Fuhrer mockingly threw:

– That's how! While my generals are trying to figure out how to win the war, has my postal minister made up

his mind? Onesorge had to retreat. However, he still did not leave thoughts about the miracle bomb and decided at his own peril and risk to support the Ardenne - fortunately, he could allocate funds for this intended for the development of the Reichspost.

So, now three groups of German scientists were working on the atomic project. One was led by Dibner, another was dormant in Göttingen, a third arose in Lichterfeld, in a laboratory run by the brilliant inventor Ardenne. Scientists from academic institutions

greeted the "Ardenne phenomenon of science" with obvious displeasure. The education he received, as well as the methods he used, disgusted most scientists. For four semesters, he studied physics,

mathematics and chemistry in Berlin, but never received a diploma valued by the scientific workshop. He was also far from the "doyen" of German physics, Heisenberg ... In general, he was known as a black sheep, self-taught, an uninvited guest, wormed his way to the holiday of scientific thought. On the

tenth of October, two learned nobles met. Karl Friedrich von Weizsäcker, perhaps on Heisenberg's advice, visited the "rebellious baron". "In very definite terms," Weizsacker told him that, like Heisenberg, he considered it impossible to build an atomic bomb. The reason is as follows: the effective cross section of uranium decreases with increasing temperature, so the chain reaction gradually decays. Perhaps von Ardenne believed these

insinuating speeches. In any case, until the end of 1940, he was only engaged in explaining to "his minister" what it meant "to design installations for the transformation of atoms." The minister turned out to be a capable student. By the end of the year, he had given money to the Ardenne to build in Lichterfeld "a Van de Graaff belt generator with a voltage of one million volts." Soon, the “enlightened minister” ordered to equip another “postal” nuclear research center in Mirsdorf and equip it with a cascade generator. Both laboratories began building 60-ton cyclotrons. Until they were ready, German scientists had to be content with the cyclotron found in Paris. In September 1940, Professor Wolfgang Gentner moved to Paris, leading

an accelerator specialist who once worked in America, in the laboratory of Lawrence 5.

In Belgium, conquered by the Wehrmacht, large reserves of sodium uranate were found. Two tons were delivered to Berlin, to von Droste's laboratory. Uranate contained many impurities; in addition, it was very humid. Against all odds, Droste began the experiment. Uranate was packaged in two thousand paper bags. Of these, they made a solid cube a meter high. The scheme of the experiment was similar to the one used by Harteck four months ago, only Droste believed that paper and water could serve as a neutron moderator, and therefore dispensed with dry ice. And this experiment ended in nothing - except that it became clear to scientists that there should not be any impurities in uranium.

This was the last "intermediate experience". In early October 1940, a laboratory, or "Virus House", was built in Dahlem. He was away from the Institute of Physics. This was done not only for the sake of great secrecy, but also to secure the institute. If an accident occurs, only this modest wooden barrack will suffer. We admit that pundits were

presumptuous and reckless, hoping that the plank walls would save us from the flow of radioactive particles. However, the Americans did not go far from them, since they erected their first reactor at the university stadium, albeit under concrete stands, but in the center of Chicago. Only our physicists, who worked, as you know, under the leadership of Kurchatov, tried to keep their reactor out of sight. But who knew that Moscow would grow so much in the future that the Kurchatov nuclear center would now be in a densely populated area of the capital?

In general, one way or another, the Reichsphysicists built their "hellish machine" in the center of Berlin. Meanwhile, they knew how dangerous it was to deal with uranium oxide. Although it belongs to weakly radioactive materials, it is extremely poisonous. Before entering the "House of Viruses", the researchers themselves put on respirators, protective overalls, shoes, and

goggles. The first uranium reactor in the House of Viruses was a vaulted aluminum

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5 in 1930, Ernest Lawrence put forward the idea of a cyclotron; later, in his laboratory, the first world cyclotron - approx. ed.

cylinder. Its diameter and height were the same - 1.4 meters. It was filled to the brim with uranium oxide. The oxide layers were interspersed with thin paraffin inserts - a moderator. The cylinder was immersed in water, which served as a neutron reflector. No one knew how the reactor would behave. The

latest calculations made by K. H. Hecker showed that the reactor would work even if paraffin served as a moderator. The neutron source (radium/beryllium) was placed in a tube, which was lowered into the center of the reactor. However, no chain reaction was observed. The reactor absorbed neutrons. A few weeks later the experiment was repeated. This time, two other reactor circuits were tested, spending 6,800 kilograms of uranium oxide on this. Paraffin again served as a moderator. Again, no result! So Heisenberg proved that it is impossible to build a reactor on uranium oxide if paraffin or ordinary water is taken as a moderator. Heavy water was required, but it was still lacking.

Heisenberg tossed between Leipzig and Berlin. In Leipzig, Professor Depel repeated the experiment with uranium oxide and paraffin. True, all four layers of uranium in his reactor were also separated from each other by aluminum spheres in which they were enclosed. Again unsuccessfully! The most interesting

results were obtained in Heidelberg, where Professor Walter Bothe and Dr. Flammersfeld mixed almost 4.5 tons of uranium oxide with 435 kilograms of water in a huge vat, and then measured neutron multiplication and their "resonance absorption" in the mentioned substances with great accuracy. Both scientists also stated that without heavy water, the uranium oxide reactor would not work. After this series of failures, the military seized the

initiative. Without consulting scientists, they decided to use in the last, most important experiments, not uranium oxide, but metallic uranium. However, the Auer firm, which had helped out so much before, did not have equipment for processing uranium oxide into pure uranium. Therefore, Dr. Riehl asked for help in Frankfurt, to the director of the Degussa company, Dr. Berwind. After all, in 1938-1940, he did a similar job for Riehl - he turned thorium oxide into more than two hundred kilograms of metallic thorium. It turned out that the recovery processes of both uranium and thorium are very similar. Even

the equipment could not be changed. Purified uranium oxide was placed in an inert argon atmosphere, heated to 1100 degrees Celsius and reduced with calcium metal and calcium chloride (flux). As you can see, thermal reduction was preferred here, while in other countries traditional electrometallurgical methods were used. The fact is that the company's leaders were sure that the uranium they received would be unusually pure. However, it contained even more impurities than the original product, oxide. Uranium was hopelessly contaminated with calcium. Later, Dr. Horst Korsching from Berlin tried to get some pure uranium by electrolysis, but Riehl considered "his fuss" unprofitable. Until the end of the war, only Degussa supplied metallic uranium. By the end

of 1940, 280.6 kg of this dangerous powder had already been produced here. For comparison, let's say that powdered uranium was obtained in the USA only at the end of 1942. Thus, looking for the sources of failures, we have no right to reproach German industry, its workers and engineers. The source of miscalculations, mistakes

and defeats was rooted in the minds of scientists, their squabbles, their actions, their wrong steps, their weaknesses. The failure of the German "atomic project" was, above all, a defeat for German science.

The only question is how much the scientists were striving for success and were they even interested in the bomb? So far, although they realized that they could get weapons never seen before, they concentrated all their efforts only on the construction of a uranium reactor - that is, they were more interested in a peaceful and purely scientific goal than a military one.

At the end of 1940, it seemed to many German scientists that after a few months, people would learn how to use nuclear energy for both peaceful and military purposes. However, when the scheduled time passed, it became clear that they were only at the very beginning of a long journey, and it was no longer clear whether the light was flickering at the end of the longest tunnel in which they entered ... Victory was moving away. Hitler's generals lost in 1941

blitzkrieg year. Blitzkrieg in 1941 was also lost to the Fuhrer's physicists.

But we ran a little ahead ... In the

middle of 1940, from the laboratory of Professor Bothe, they happily reported that graphite, an extremely cheap and abundant material, could also serve as a moderator. As the experiment, deftly staged by the professor, showed, the diffusion length of thermal neutrons in carbon (and graphite is a crystalline modification of carbon) was 61 centimeters. If the graphite is perfectly cleaned, the professor rejoiced, this figure will increase to 70 cm. Great! The military has already turned to Siemens with a request to supply the purest graphite.

In January 1941, in the same place, in Heidelberg, the experiment was repeated. And what a disappointment it was! This time, an error crept into the results. The sample was made of the purest Siemens electrographite. Bothe looked with horror at the instrument readings: only 35 centimeters! This means that graphite is not suitable for moderators. Bothe's opinion was trusted, and therefore all experiments with graphite ceased. It was not until 1945, during the B-VIII experiment at Haigerloch, that the error was discovered. Probably, the reason for the failure was nitrogen impurities that got into the graphite from the air.

Nevertheless, from now on, work on the "uranium project" has slowed down dramatically. Most researchers who have studied German nuclear research reports recognize Professor Bothe's mistake as "fatal." To console the

German scientists, let us add that the leading French physicists Halban and Kovarsky, who worked in Cambridge, made the same mistake. They, too, decided that graphite was a useless moderator and focused their efforts on developing a heavy water reactor.

We add: if in 1940 Professor Harteck had been given a normal experiment with dry ice, he would have measured the absorption of neutrons in carbon and his “opposing” colleagues would have avoided mistakes. Recall the

story: when in 1942 American scientists managed to build the world's first nuclear (uranium) reactor, they used graphite as a moderator. Later, the first industrial plutonium reactor will be built in Hanford (USA), again with graphite as a moderator.

So, the Germans, having carelessly set up the most important experiment, now patiently waited for the right amount of heavy water to be produced at a distant Norwegian factory. Dr. Karl Wirtz, one of the leading experts at the Institute of Physics in Dahlem, was sent to Rjukan with an inspection. Before the war, Wirtz was engaged in just heavy water - he determined its physical constants and specific gravity. Now this nervous, hurriedly chattering scientist was one of the main characters of the "uranium project".

Wirtz undertook to find out if the output of heavy water could be increased. When the company was created, its customers were only scientific laboratories, and their needs required not tons, but kilograms and grams of heavy water. After inspecting the factory, the strict inspector excitedly reported that the production of heavy water is extremely unprofitable, that 100 kilowatt-hours of electricity are spent here to produce one gram of it, that is, - returning to German realities - 100 Reichsmarks. Tons of heavy water will truly become golden.

However, even ordinary water could become a moderator in the reactor, since graphite was shamefully set aside, and the "Norwegian" water flowed down drop by drop. Yes, if the Germans had learned to enrich the uranium isotope U-235, that is, to isolate and accumulate it, then ordinary water could have been dispensed with. However, at the beginning of the same gloomy 41st year, Professor Harteck admitted his defeat. He could not separate the isotopes of uranium, although the researcher nevertheless got hold of inaccessible nickel. Now he had a 4-meter pipe in Hamburg, made up of two concentric cylinders: the inner one was heated with hot steam, the outer one was not. But that didn't help either. Two experiments ended in failure. The last one lasted 17 days. During this time, Harteck received only one gram of uranium hexafluoride with twice the isotope content. The effect of such "isotope separation" did not exceed one percent.

In early April 1941, a regular meeting of leading nuclear physicists took place.

Germany. Summed up, one sadder than the other. “We are facing two problems,” wrote Paul Harteck in a memorandum sent by him to the armaments department of the ground forces. – 1. Production of heavy water. 2. Separation of isotopes ... The first is more relevant, since 6 will work the available data, in the presence of heavy water, a uranium isotope without how, judging by enrichment machine. Besides, making heavy water is still easier and cheaper than enriching U-235 isotopes.”

Recall that in October 1940, a special conference had already been held in Leipzig to discuss the separation of uranium isotopes. Then the Leipzig physicist Bagge, having listened with interest to his colleagues, for some month came up with a completely new method of isotope separation. It is necessary to obtain a narrow "molecular beam", consisting of both randomly mixed isotopes, and pass it through a system of two rotating blends. It is known that after a certain time the molecules in the "beam" will regroup: the heavy ones will lag behind the lighter ones. We select the rotation speed of the blends so that the "package" of light isotopes has time to slip forward into the sump, and the rest do not. In early April, Bagge submitted a note

with this proposal to his boss, Dr.
Basche, and on the 23rd left for Paris. He was asked to help equip the

cyclotron. While he was working in Paris with Gentner and - do not be surprised - Joliot-Curie, who also participated in the German "uranium project" under fear of reprisals, the memorandum reached Professor Harteck, and at the end of July he was urgently withdrawn. On August 2, he visited Munich, where he met with the "highest authority" - Professor Clusius. “He considers the device 7 efficient,” said

Bagge. The whole next month, the young scientist travels between Berlin, Leipzig and Kiel, consulting with various specialists who have not been assembled by the Wehrmacht into a single scientific "sharashka". Most of all, he cares about what the evaporator, the most important part of the circuit

On September 11, Bagge gets an appointment with his superiors - Schumann and Dibner. Here he first learns the true purpose of the "uranium project". It's about finances. Dibner complains about how much money this "isotope separation" takes. But why is it necessary to be distracted by this interesting, but side process, Bagge wonders. After all, a nuclear reactor will probably work on ordinary uranium, you just need to stock up on heavy water. “Yes, there will be a reactor, but not explosives,” was the answer.

And what? Instead of intensifying work in every possible way, Bagge is again released to Paris for two months. Only at the end of November does he return to give a presentation on the "isotope gateway" to leading experts in this field. He is listened to by Harteck, Clusius, Bonhoeffer, Korsching and Wirtz, as well as the authorities - Basche and Dibner. It was decided "by all means" to build a similar installation. By that time, the idea itself had already been a year old.

Meanwhile, Bagge's unwitting rival, Dr. Wilhelm Groth from Hamburg, also worked tirelessly. He created an ultracentrifuge for the enrichment of U-235. Three years earlier, the American physicist J.W. Beams had described the "gas centrifuge" in the pages of the Review of Modern Physics. That's it, Grot also wished to adapt it for processing "recalcitrant" uranium hexafluoride. Since the gas resists thermal diffusion, let's take it for a ride, because the centrifuge sorts the atoms because their masses differ.

At the beginning of August 1941, Groth negotiated with Dr. K. Bayerle, one of the leaders of Anschuetz & Co from Kiel. A week later, the company receives an order for the construction of a prototype centrifuge. October 22, her drawings are ready. We already stocked up with an electric motor that developed speeds of up to 60,000 revolutions per minute. Bayerle estimated the total cost of the work at 12,000–15,000 Reichsmarks.

But other firms with which I had to deal acted much more slowly. So, Grot wanted to make a rotor for a centrifuge from a very durable steel alloy. He turned to the Krupp plant, but they asked to wait eight months. Had to get by

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6 reactor

7 "isotope lock"

an alloy of light metals, fortunately in Hannover it was smelted by mid-December. It was planned that in February 1942 the machine would start working. “Daily it will produce about two kilograms of uranium hexafluoride, whose isotope U-235 will be enriched by 7 percent,” Groth wrote in December 1941.

In general, after the memorable conference in Leipzig, scientists enthusiastically proposed more and more new ideas, and by the end of the “gloomy 1941”, seven (!) U-235 enrichment methods were seriously studied at once: a method using a mass spectrograph in the Ardenne laboratory; thermal diffusion; "isotope gateway"; ultracentrifuge; "separating pipe" (thermal diffusion option); separation of isotopes in liquid uranium compounds and diffusion of isotopes in carrier metals. It would be worth mentioning the eighth method - the diffusion of uranium hexafluoride through porous walls. The uranium isotope U-235 penetrates more easily, and by repeating the process many times, we enrich this isotope.

The German scientist Gustav Hertz, Nobel Prize winner in 1925, came up with the method of gaseous diffusion in the early thirties, separating isotopes of neon. But they didn't pay any attention to him. In vain! It was by this method that isotopes were successfully separated both in England and in the USA.

On the threshold of the atomic bomb

So, the preparatory work was completed in draft. Scientists have become confident that a split atomic nucleus can become a source of energy of unprecedented power. What to do next? In the summer of 1941, German

physicists again began to think that plutonium could replace uranium, which had been so much trouble. And they were helped in this by a new, very colorful employee - Professor Fritz Houtermans, who appeared at the end of 1940 in the laboratory of Baron Ardenne. His story is not quite usual

for Germany, but typical for the USSR. In 1933, when the Nazis came to power in Germany, he fled the country. He ran not to America, not to France, like his colleagues, but to Russia. Here he was soon recorded as a spy, and, avoiding acquaintance with a German concentration camp, he ended up in a Soviet one.

In 1939, after the signing of the Molotov-Ribbentrop pact, he was released from the dungeons of Beria and transferred to the casemates of the Gestapo. (If only our special officers knew who they were letting go!..) He spent only three months there and was released, but he was forbidden to work in state institutions. And then he was saved by Professor Max von Laue. He recommended it to Baron Ardenne, whom, as we have seen, academic scientists with a happy fate disliked and shunned.

Houtermans was a real find for the Ardenne. In August 1941, the disgraced professor typed 39 pages on a typewriter, entitled “On the Question of the Beginning of the Chain Reaction of Nuclear Fission.” In his report, the first of the German scientists, Houtermans described in detail a chain reaction under the action of fast neutrons, and also calculated the critical mass of U-235, that is, the smallest mass at which a self-sustaining nuclear chain reaction can proceed.

First of all, he was interested in the element later named plutonium. Here are the arguments of the scientist. Natural uranium contains much more U-238 isotope than U-235. So isn't it more logical to use this common isotope than to spend so much time and effort on isotope separation? “Each of the neutrons absorbed by uranium-238, and not involved in the fission of uranium-235, thereby contributes to the appearance of a new nucleus, which can be fissioned using thermal neutrons,” Houtermans wrote. A few months earlier, a physicist from Vienna, I. Schintlmeister, had shown that when the isotope U-238 was bombarded with neutrons, a transuranium element (number 94) was formed. Using it, continued Houtermans, it is possible to create a new explosive. It's up to the chemists. We need to figure out how to separate this 94th element from uranium. This modest article, written

by a disgraced scientist (“I thank Baron Manfred von Ardenne for the opportunity to write this work”), became a milestone in the fate of the German

nuclear physics. Its author convincingly showed that there is no need to separate isotopes. We must go the other way. However, his arguments were not heeded.

Meanwhile, in March 1941, an experiment conducted at Berkeley showed that plutonium is just as easily fissile as uranium-235.

In the second half of 1941 Norsk-Hydro received an order for the production of one and a half tons of heavy water. Work began on October 9, but by the end of the year only 350-odd kilograms were ready. In addition, more than two and a half tons of pure uranium powder had been received by the end of the year.

However, Heisenberg and Depel, repeating the uranium reactor experiment at their home in Leipzig, again used uranium oxide rather than metal powder. True, now they had as much as 164 kilograms of heavy water. Uranium oxide (142 kilograms) was placed inside an aluminum ball with a diameter of 75 centimeters. The two oxide layers were separated by a thin aluminum sphere. The neutron source was in the center. The reactor was “hidden” in a tank of water. However, this time, neutron

multiplication was not recorded. Then both professors rechecked their calculations and took into account the neutrons that were absorbed by the aluminum sphere, which separated the two concentric layers of oxide. This is where they finally got a "positive" neutron multiplication factor. “It was in September 1941,” Heisenberg recalled, “that we realized that the atomic bomb could be built.” At this time, disputes are growing among German physicists. Many began to be

implicitly tormented by the question of whether it is moral to continue working on the "uranium project" - after all, a bomb will inevitably be created and, therefore, many thousands of people will die. These doubts overwhelmed Heisenberg, and Weizsäcker, and Houtermans.

At the end of October 1941, Heisenberg traveled to Denmark to meet with Niels Bohr and ask him for advice on what to do next, what to do?

Professor P. Jensen noted about this meeting: the "high priest" of German theoretical physics directed his steps to the "pope of science", Bohr, in order to seek "absolution of sins" from him. So, Heisenberg asked "Pontifex

Niels I" whether a physicist had the moral right to work during the war on the creation of an atomic bomb. He asked a question to the one who came to confess his sins: is it really possible, in his opinion, to use nuclear fission for military purposes. Heisenberg contritely said to "the master of his conscience": yes, he understood,

that it is possible.

What if, he wanted to ask Bohr, the scientists of the world joined together and tried to stop their governments from building the atomic bomb? Let Bohr and other prominent scientists just make sure that the German physicists also stop working on this project ...

However, Heisenberg seems to have formulated his proposal too vaguely, vaguely. In any case, Bohr did not heed him. “Always and everywhere, physicists will inevitably be drawn into military developments,” said an expert on the sinful nature of scientists. The

caution of Bor, a new subject of the Third Reich, can also be explained by the fact that he was ready to suspect an insidious trick. He guessed that German nuclear physicists were lagging behind the Americans, because many of the leading scientists had left Germany. The Nazis wanted to stop this lag in any way, including by pushing the allies to the "insidious moratorium." In general, the conversation

horrified Bohr. He became convinced that Nazi Germany was on the verge of creating an atomic bomb, and this event was inevitable.

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“The interests of the entire German economy should be subordinated to the needs of the military industry,” said Adolf Hitler in December 1941, when the German troops were defeated near Moscow, the blitzkrieg turned into a tedious, protracted war, and Armaments Minister Fritz Todt reported to the Fuhrer that the military industry was on the brink of collapse. It's time to tighten your belts.

The attitude towards the "uranium project" has also changed. It is considered promising, but not paramount. As always and everywhere in the days of failures and defeats, the authorities "change the scenery", because it is easier than to delve into the essence of what is happening. The management of the "uranium project" is entrusted to the Research Council, which was subordinate to the Ministry of Education, headed by Bernhard Rust, a man with little knowledge of

nuclear physics. Academic scientists, however, were delighted with such organizational conclusions. From now on, the stigma of "accomplices of the Wehrmacht" who create deadly weapons was erased from them. But Abraham Esau

cheered up. Now he again had someone to command. The "new era" began confusingly, stupidly. On February 26–27, 1942, Professor Schumann scheduled a meeting within the walls of the Kaiser Wilhelm Institute of Physics. The invitees had already been given special passes, told their order of performance, when the Research Council suddenly intervened. On the same day, February 26, a "parallel" meeting was scheduled in the building of this council. The circle of guests was very wide: officers of the Wehrmacht, the highest ranks of the SS, the luminaries of science. The latter included Hahn, Heisenberg, Bothe, Geiger, Clusius, Harteck, the "unlucky organizer" Schumann and, of course, Esau. All of them were nominated as speakers. However, the scientists were allowed, having enlightened the “gentlemen of the officers”, to go into the walls of the Institute of Physics and take part in a purely scientific meeting, peering at it into the finest details of the problem, and not covering it “in general” for a meager ten minutes - that is how much time was allotted for reports "in the face of those in power."

However, the organizers of the "parallel" meeting did not rest on that. On the twenty-first of February they sent out invitations to Speer, Keitel, Himmler, Raeder, Goering, Bormann and other Nazi bosses. These invitations also contained the agenda of this “educational meeting”:

> "1. Nuclear physics as a weapon (Prof. I.
> Schumann). 2. The fission of the uranium
> nucleus (Prof. O. Gan). 3. Theoretical foundations of energy production by splitting uranium (Prof.
> W. Heisenberg). 4. Results of studies of energy production installations (Prof. V.
> Bothe). 5. The need to study the general principles (Prof. H.
> Geiger). 6. Enrichment of uranium isotopes (Prof.
> K. Clusius). 7. Production of heavy water (Prof. P.
> Hartek). 8. On expanding the working group "Nuclear Physics" by attracting representatives of industry and various departments of the Reich (Prof. A. Esau).

To this sheet, which had already depressing the minds of the officers with a multitude of enigmatic words, a careless secretary unexpectedly pinned up four more sheets: the topics of all the reports heard on those same days at the Institute of Physics. And these lines already sounded like a real Chinese literacy: “diffusion length”, “effective cross section”, etc., etc.

It is no wonder that Himmler, looking at these strange words, refused to waste his precious time listening to them, even in the company of the highest ranks of the Wehrmacht and the SS. Field Marshal Keitel was more diplomatic. He assured Rust that he attaches great importance to "these scientific problems", but the burden of duties entrusted to him does not allow him to take part in the meeting. Raeder notified the arrival of one of his deputies. As a result, none of the "powers that be" came to listen to the "learned gibberish." The five-page list scared away all the big game.

But the meeting still took place.

After the presentations by Schumann and Hahn, Heisenberg took the podium and spoke of the chain reaction of nuclear fission as the basis for the production

of "nuclear energy". This reaction is possible only if during the fission of nuclei more neutrons are released than are absorbed by other nuclei. With natural uranium, everything happens the other way around, so in its pure form it is unsuitable for such a reaction. Let's try, Heisenberg enthusiastically continued, to compare the process of nuclear fission with

"marriage", and the absorption of neutrons with "death". In natural uranium, the "death rate" is higher than the "number of births". In life, this leads to the fact that the entire "population" of the country soon dies out. This can be changed in three ways, firstly, by requiring each family to have more children, secondly, by increasing the number of "marriages", and thirdly, by reducing "mortality", Heisenberg drew his "demographic" conclusions. We cannot change the average number of produced neutrons. This is a constant given to us by nature. Let's do it differently. Let's increase the content of the rare isotope of uranium - uranium-235, and then the "mortality" of neutrons will decrease. If we manage to completely isolate uranium-235, then mortality will cease altogether. If we accumulate a certain

amount of pure uranium-235, then the number of neutrons can increase incredibly in it in the shortest instant. Within a fraction of a second, all the splitting energy will be released. There will be an explosion of unprecedented power. However,

isolating uranium-235 is very, very difficult. Most of the scientists working on this project are trying to solve exactly this problem, which Professor Clusius will tell the audience about. I will only add, Heisenberg said, that the Americans seem to be paying particularly close attention to this issue. There is another way to reduce "mortality".

The latest research has shown that neutrons "die", that is, are absorbed, only if they are endowed with certain energies, that is, they move at a certain speed. It can be reduced. Scientists are trying to find substances that slow down neutrons but do not absorb them. Their best "moderator" would be helium, because it does not absorb neutrons at all, but this gas is too light and we cannot use it. Only heavy water remains, since experience has shown that graphite and beryllium are unsuitable for this purpose. The reactor will obviously consist of several layers of uranium and a moderator. The thermal energy created by it

will begin to rotate the turbine. The "uranium machine" does not consume oxygen, and therefore it is especially good for equipping submarines. However, its usefulness is not limited to this. Inside the reactor, when the uranium nuclei are converted, a new element with the serial number 94 appears. It obviously has the same explosive power as pure uranium-235. It is easier to accumulate this element than uranium-235. While Heisenberg was reading the basics of nuclear physics to the officers, a curious event

occurred in Dahlem, at the entrance to the Institute of Physics, where another meeting was beginning. Dr. Berkei stood at the door checking the passes.

Suddenly, a stranger appeared in front of him and, introducing himself as Eckart, said that Heisenberg himself had allowed him to attend the meeting. Berkei, embarrassed by the tyranny of the instructions, but not daring to resolutely refuse the stranger, went to Dibner for advice. He had long been imbued with the orders of wartime and, without delay, judged a suspicious case: “The stranger must be detained immediately, until his identity is clarified. Use force if necessary, Berkei!” When he, ready

for decisive action, returned to the door, the stranger was gone. Neither Heisenberg, who was asked afterwards, nor other scientists could remember "Mr. Eckart, also invited." I wonder who it was?.. A scout from which country?.. In general, at the conference in Dahlem, which lasted for three

days, almost all the country's leading nuclear scientists made presentations. Professor Bothe (we will not forget this specialist in graphite for a long time) reported on his measurements; Weizsacker - about additions "to the theory of resonant absorption in a uranium machine." A number of presentations were devoted to the behavior of uranium when bombarded with fast neutrons, as well as the features of transuranium elements number 93 and 94 (that is, neptunium and plutonium). Professor Depel described a recent experiment with a reactor (L III) containing uranium oxide and heavy water, and Wirtz introduced experiments that were carried out in the "House of Viruses", some few hundred meters away from the meeting room.

The organizers of this purely scientific conference compiled a report on it on 131 pages, trying to notice in it even the most indistinct ideas and statements that flashed at the meeting. Let's flip it...

> “We can consider plutonium as an alternative to uranium only when - we have at our disposal an operating“ heat engine ”8. Now we know too little about the features of plutonium and about its required concentration in order to draw definite conclusions ... To ignite a new explosive type,
>
> it would be enough to combine a certain amount of it (presumably from 10 to 100 kilograms) ... A close-knit team of scientists was created, the technical production of uranium and
>
> heavy water began ... The intermediate results of experiments in Leipzig show that our current
>
> the problems may be unfounded...
>
> Warships, submarines and large tanks can be equipped with uranium energy generators... It is planned
>
> to build a huge "uranium furnace" capable of holding more than a ton of heavy water... in particular, but also by the fact that solutions to these problems are also being intensively sought in countries hostile to us, and above all in America.

The results of both conferences, which at first almost turned into a "mess instead of physics", turned out to be successful on the whole. Otto Hahn noted: "Our reports in the Research Council: a good impression." Heisenberg later admitted: "In the spring of 1942, after we finally convinced Rust that our work could be done, for the first time we had at our disposal the largest funds in Germany."

Rust, indeed, became malleable "human material", but the highest ranks of the Wehrmacht remained strong as flint. Ignoring the meeting arranged for them, they were not imbued with the aspirations of scientists and their optimism. For many of them, the hopes of nuclear physicists remained the same as before, vague, mysterious promises of "scientific charlatans." One can only guess whether they would change their minds and contribute to the "uranium project" if a more attentive secretary sent invitations to them? Now the fate of the project depended on the capacity of a small Norwegian factory. There was no alternative. By the beginning of 1942, German physicists were finally convinced that only

heavy water could serve as a neutron moderator in a nuclear reactor.

Meanwhile, Norck-Hydro was still trying to fulfill "an order for the production of one and a half tons of heavy water." As we have already noted, by the end of 1941, only 350-odd kilograms were ready. After all, the factory could produce so far 140 kilograms per month. The new German masters were very annoyed. At the beginning of the new year, the factory was equipped with new electrolyzers and the output of heavy water ... decreased to 91 kg per
month.

Dr. Yomar Brun had to go to a meeting in Berlin. Naturally, he was not allowed into the "House of Viruses"; the goals of the project were also not revealed, but they were taken around the Institute of Physics in Dahlem. The picture he saw made even the cold-blooded Scandinavian gasp. In the corner of Dr. Wirtz's laboratory, two glass bottles containing 130 liters of heavy water stood quietly. The slightest blow would be enough to shatter them. What negligence, Brun shook his head, how they store this water! She's worth her weight in gold.

The Germans, on the other hand, were stubbornly confident both in the integrity of the glass cylinders and in the unshakable the loyalty of the Norwegians, and the impossibility of any sabotage in their unique factory.

But still, it was decided to expand the production of heavy water in Germany. At the end of February 1942, Dr. Herold, scientific director of the Leinawerke plant (this plant was part of the IG Farbenindustry concern), met with Harteck and proposed to build

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8 i.e. nuclear reactor

a pilot plant for the production of heavy water, which would operate on a slightly different technology than in Norway. According to his calculations, the cost of one gram of such water would not exceed 30 pfennigs, and this is "quite tolerable." The construction of the installation will cost 150,000 Reichsmarks. All expenses will be covered by the group. On April 30,

Professor Esau, who was now in charge of the main "atomic project", approved this initiative. So, the IG Farbenindustri concern was attracted to participate in the project, which was, perhaps, a mistake. In 1944, when the situation becomes critical, the concern will refuse to fulfill its obligations.

In the meantime, the Germans were far from collapse, and even the "Norwegian vassals" gradually overcame the decline, bringing the release of heavy water in March 1942 to 103 kilograms per month. However, the matter was temporarily limited to this record. In April, not a drop of heavy water escaped from the bins of the factory. “The level of the river dropped sharply,” a dispatch flew to Berlin, “and we had to stop production.” The turbines started working only on May 6, 1942. In general, the successes were insignificant, and Consul Schepke, who followed from Oslo the attempts of the factories entrusted to Germany, had the right to report to Berlin about the "certain passive resistance" of the Norwegians.

* * *

In the meantime, work on the enrichment of uranium-235 continues in Germany. In early January 1942, Dr. Bagge received the first parts of his "isotope lock". On February 13, he will test the vaporizer by filling it with uranium.

Three groups of scientists at once tried to isolate uranium-235 by electromagnetic means. In October 1940, speaking at a conference in Leipzig, W. Walcher convinced the audience that tiny amounts of isotopes could be separated using a mass spectroscope. He now learned to sort silver isotopes and believed he could separate uranium isotopes. Similar experiments were carried out in Dahlem by H. Ewald, one of Otto Hahn's assistants. However, to everyone who watched these experiments from the outside, their drawback was obvious: these diligent scientists isolated really "tiny" amounts of isotopes. The account was kept literally on
ions.

However, Baron Manfred von Ardenne, who stayed away from academic schools, considered this minus fixable. In April 1942, in the bowels of his laboratory, a report was being prepared "On a new magnetic isotope separator designed to move large masses 9". Indeed, a special magnetic separator was created in his laboratory in Lichterfeld. When, after the war, the United States declassified some details of its "atomic project", it turned out that the stubborn self-taught Ardenne was following the same path as the Americans.

In April 1942, the "ultracentrifuge of Dr. Groth" was also ready. We remember that he decided not to spend eight months waiting for a rare steel alloy and replaced it with a light metal alloy. Grotto was frankly in a hurry, but excessive briskness is not always appropriate: the centrifuge drum, made of ersatz, simply fell apart on the very first tests. The metal could not withstand the load.

Refusing to wait another eight months, Grotto recklessly ordered another, already a small drum, but that one burst, burying theoretical hopes. The only consolation was that in the short minutes that this disastrous experiment lasted for the instruments, the content of uranium-235 isotopes really increased. Professor Harteck, assessing the failures of his Hamburg colleague, noted that brilliant prospects lurk behind these "childhood illnesses". The scheme is based on simple physical laws, which even uranium hexafluoride obeys. But all the same, laws are laws, but something had to be done with the drum. He was torn to pieces uncontrollably. By May 1, 1942, Degussa had already produced three and a half tons of pure,

powdered uranium. Its recipients were mainly the armaments department of the ground forces,

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9 substances

Nikolaus Riehl, an emigrant from Petersburg, and Professor Heisenberg. In Leipzig, at the institute where he worked, a new, major experiment with a uranium reactor was being prepared.

Previous experience ("two layers of uranium oxide inside an aluminum ball") was successful. Now Heisenberg and Depel were going to fill the reactor with uranium. It was then that all the insidiousness of uranium powder was exposed. In the air, he instantly flared up. Although one of the laboratory assistants tried to pour it carefully, there was a dull explosion. Huge tongues of flame shot up three or four meters up. The laboratory assistant badly burned his hand. A can of uranium, which was half a meter away from him, also caught fire. Depel, together with the victim, began to sprinkle it with sand. The flames disappeared, but the next morning, scientists discovered that the uranium was still smoldering. Uranium "coals" were thrown into the water ...

Now you can read this in every textbook: "Powdered uranium ignites easily and, when sprayed in air, burns with a bright flame." And then no one knew about it. We learned how to handle uranium by trial and error. Thus, the ignition of powdered uranium also occurred in the laboratory of IV Kurchatov. But back to Leipzig. Everything was ready

for the experiment. On February 3, 1942, Degussa sent Heisenberg 572 kilograms of uranium powder. The decisive experiment number L IV began. To save themselves from a fire, uranium was poured into the reactor in a carbon dioxide atmosphere. In total, more than 750 kilograms of uranium fit in it. The reactor consisted of two aluminum hemispheres tightly screwed together. Another 140 kilograms of heavy water was added inside. The weight of the unit reached almost a ton. He was again "hidden" in a tank of water. The neutron source (radium/beryllium) was in the middle. measurements

started.

There was soon no doubt. Much more neutrons reached the surface of the reactor than their source emitted. Leipzig physicists calculated that neutron multiplication was 13 percent. "We have finally designed ... a plant that produces more neutrons than it absorbs," both scientists reported to the weapons department. "The result achieved is much more favorable than we might expect, relying on calculations made on the basis of experience with uranium oxide."

As was clear from the new calculations, if we increase the reactor by loading five tons of heavy water and ten tons of cast uranium into it, we will get the world's first "self-excited" nuclear reactor, that is, a reactor inside which a "nuclear chain reaction" will take place. And on May 28, one of the Frankfurt factories begins to cast plates from a ton of uranium supplied there by the Degussa company. On June 4th, Heisenberg came to a secret meeting in

Berlin. Two months ago, Goering ordered the suspension of all scientific work that did not have a direct military purpose. “Everything for the Reich, everything for victory”, the rest had no right to exist yet. Now the "supreme judge" Speer was waiting for the nuclear physicists. He was free to cross out the experiments they planned or pardon them. The fate of the entire "uranium project" rested in the hands of a tired, overworked minister. The people gathered in the hall stared intently at the door. Its doors swung open, and Albert Speer silently walked through the opening;

on the right hand was one of his assistants, Dr. Karl-Otto Saur, on the left - Professor Porsche, the general designer of the Volkswagen company. Diebner, Heisenberg, Hahn, Harteck, Wirtz and Professor Thyssen froze in the hall, looking at them (three months ago, “above all barriers,” he dared to send a letter to Goering himself, convincing him of the benefits that the splitting of the atom conceals). Here was also Albert Vögler, president of the Emperor Wilhelm Society, which patronized academic institutions. Prominent military men were also present: General Leeb, head of the armaments department of the ground forces, Colonel General Fromm, commander in chief of the Reserve Army, as well as Field Marshal Milch (Air Force) and General Admiral Witzel, Raeder's deputy. And now Heisenberg went to the podium, mastering the minds of listeners as easily as he mastered the secrets of the atom. Let us recall that by the middle of 1942 the character of the war had drastically changed. Lübeck, Rostock and Cologne were already in ruins after

massive British air raids. Thousands of bombs dropped on German strongholds demanded retribution. TO

the walls of the destroyed cities called for revenge. And so Heisenberg, defending his plans, immediately spoke of the military benefits of "splitting the atom." He explained to the assembled generals how the "atomic bomb" was constructed.

This was a surprise to his colleagues, everyone believed that he was only interested in a nuclear reactor. Dr. Telshov, secretary of the Emperor Wilhelm Society, recalled that the word "bomb" that fell from the lips of Heisenberg amazed not only him, but, judging by their faces, most of those present.

In theory, there are two substances that can be used as explosives, Heisenberg continued to afflict skeptics: uranium-235 and element 94 (plutonium). True, Bothe's calculations show that protactinium can also be fissile with the help of fast neutrons and that its critical mass is the same as that of plutonium and uranium-235. However, protactinium can never be produced in sufficient quantities. As soon as Heisenberg stopped talking, Field

Marshal Milch asked him what size a bomb would be that could destroy an entire city. “The charge will be the size of a pineapple,” the physicist replied, and busily outlined the murderous shapes with his hands. The military were taken aback. With his next remark, he terrified them. He said that the Americans, most likely, will produce such a bomb in two years, but we are not able to do this due to difficult economic circumstances. Such a bomb cannot be made for several months. This will take too long. (“I am happy,” Heisenberg wrote six years later, “that I paralyzed our resolve: and even then the orders of the Führer prevented us from really concentrating all our efforts on building an atomic bomb.”) Then Heisenberg began to talk about the uranium reactor, about how important it is both for our military plans and for the future, post-war development of Germany.

Speer, having heard enough of the great physicist, did not object to him and admitted that even now, in the days of the war, it was necessary to build the first uranium

reactor in Germany. It was decided to place it in Dahlem, on the territory of the Institute of Physics. Thus, the relatively "peaceful" part of the uranium project was saved, although the government did not guarantee scientists full and unanimous support. Milch left the meeting disappointed. A tiny bomb, "the size of a pineapple", was inaccessible, "even though his eye saw it." Two weeks later, he signed an order for the mass production of a simple and reliable V-1 rocket projectile.

However, on that day Milch once again had the opportunity to exchange a few words with a brilliant orator. In the evening, after the meeting, dinner was waiting for everyone. Seizing a moment, Heisenberg quietly asked the marshal how this war would end. With his answer, he plunged the physicist into horror: if we lose it, we will all have to take strychnine. Heisenberg thanked the marshal for an honest answer and, with the analyst's common sense, reasoned that now the Nazi leaders also consider the war lost.

A few minutes later, the corrosive professor continued his "sociological survey". At the end of dinner, he returned with Albert Speer. He decided to finally inspect the possessions of the Institute of Physics. Once out of the public eye, Heisenberg asked Speer the same question as Milch. The minister silently turned to his interlocutor and gave him a completely empty, meaningless look. The professor appreciated how eloquent the minister's silence was. On June 23, 1942, Speer reported to the Fuhrer on the

work done. Under the fifteenth item in his report was "the uranium project." A brief note left by Speer testifies: "The Führer has been briefly informed about the conference on the splitting of the atom and about our support." This line is the only fact proving that Hitler knew at least something about the "uranium project". The June 4 meeting could have been a turning point for German nuclear physics. Nazi Germany could have concentrated all its efforts on

building an atomic bomb if the military had believed in its reality. That did not happen. The project was not closed, but it did not receive full support either. “Minor scientific pampering, promising something, but not guaranteeing anything,” is how the German military probably thought of him. When, after some time, Heisenberg accidentally found out how much money was being invested in the creation of V-1 and V-2 shells, he was overcome with anger: if only they cared about uranium research!

However, Heisenberg could not help but realize that he himself tried to divert the interest of the German military from the "fantastic and unattainable" atomic bomb.

Meanwhile, on June 17, 1942, in the United States, Dr. Vannaver Bush reports to Roosevelt that, under favorable circumstances, the United States will have time to manufacture atomic weapons before the end of the war and thereby be able to influence its course. A month later, the United States government decides to build a plant for the separation of uranium isotopes by electromagnetic means. On

June 23, the day the Fuhrer casually listened to the "results of the splitting of the atom," things suddenly got out of control in the Leipzig laboratory. The spherical reactor had been resting in a vat of water for twenty days now. Suddenly the water was indignant, gurgled. Bubbles bubbled up from the depths. Something strange was happening. Depel took a sample of bubbles: hydrogen. So, somewhere there is a leak and the uranium is reacting with water. After

a while the bubbles disappeared, everything calmed down. Nevertheless, Depel decided to remove the reactor from the vat to see how much water got inside. At 3:15 p.m., the same unfortunate laboratory assistant, already injured by the fire, loosened the cap on the fitting. Some noise was heard. The air was pulled in with force, as if there was a vacuum in the center of the ball. Three seconds later, the air jet suddenly surged upwards. Hot gas escaped from a crack 15 centimeters long. Sparks flashed here and there, burning grains of uranium flew out. Then the flames went up. Its height reached twenty centimeters. Aluminum melted around it. The fire intensified. Depel, who came running to the rescue, began to

extinguish the flames with water, but the fire did not subside. It was only with difficulty that they managed to knock it down, but now smoke was continuously pouring out of the crack, and its hole became wider and wider. Anticipating a catastrophe, Depel ordered to immediately pump out heavy water in order to save at least some important part of the reactor. The “uranium machine” itself was again “hidden” in a vat of water in order to cool it down. Heisenberg glanced into the lab, saw that "the situation was under control" and departed to conduct the seminar.

The situation was completely out of control. The reactor temperature rose. At 6:00 pm—the life-threatening experience had already lasted three hours—Heisenberg ended the seminar and returned to Depel. The reactor was heating up. Its creators peered tensely into the water, when suddenly the reactor shook. Without drawing more theoretical conclusions, both scientists turned to practice and rushed out of the room. Seconds later there was an explosion. Jets of flaming uranium scattered everywhere, the building was engulfed in flames. “After that, we called the fire brigade,” the two mischievous thinkers concluded their report.

Both of them were saved that day by a miracle. Most of their laboratory was destroyed, all uranium reserves and almost all heavy water reserves perished "in the crucible of the experiment." Heisenberg's self-esteem suffered just as seriously. He was so skewed when the head of the fire department, arriving at the laboratory and not ceremoniously choosing Saxon expressions, congratulated the dumbfounded meter on such tangible evidence of the "splitting of the atom."

True, the fireman, the bonfire of Heisenberg and others like him, was still wrong, suspecting a “nuclear chain reaction” of misfortune. His excited slanders are easily refuted by the opinion of chemists, for whom such explosions are commonplace. Water penetrated the shell of the ball and reacted with powdered uranium. Hydrogen was formed - a gas that easily explodes. The laws of chemistry cruelly predetermined the events that took place in the realm of physics. Reporting to his superiors, Depel advised in the future to use only solid uranium, and not its powder. However, the discovery was not news. A year ago, the leaders of the Degussa company (including Nikolaus Riehl) sent a circular to the armaments department, in which they drew attention to the insidious properties of uranium. Depel overlooked this official paper and,

justifying his indiscretion, now wrote a sharp letter to Ril, reproaching him for sending them "some kind of rubbish." Depel was generally a strange person. During the war years, he managed to quarrel to the nines with almost all his colleagues, mercilessly vilifying and reproaching them. His careless tongue touched only Heisenberg. As for Riel, he tried to observe etiquette and recalled an old circular. In response, he received a new portion of abuse from Depel. On this, their relationship faded away, Riel considered it best not to answer the "bilious madman."

We add that the next time they had a chance to meet under very unusual circumstances. In June 1945, both of them, against their will, ended up in the same city, in the same place: in Moscow, in the waiting room of Lavrenty Beria. The latter was in charge of the Soviet atomic project and "invited" (let's keep silent about the means) some leading German physicists, who were given to our army "as a trophy", to participate in it. Among them were Riehl, Depel, Professor Vollmer, Gustav Hertz (he never left Germany, despite his non-Aryan origin, but because of him he was not admitted to the German "uranium project" and the British successfully used his method of gaseous diffusion, but not Germans). It was then, "in the fullness of Moscow", and there was a reconciliation of two old enemies. Depel humbly approached Ril and asked him for forgiveness for two long-standing, stupid letters. The whole world familiar to them collapsed, and what was left for them to do, the two captives of Beria? Just keep each other. On the ninth of June - less than a week after the meeting

with Speer - the shake-up began. Now the Research Council, and hence all the work on the "uranium project", was led by Reichsmarschall Goering himself. Under him, his own "presidium" was created, which included 21 ministers, senior officers and leaders of the party, including Himmler, but where there was not a single scientist.

The German "Aryans and Party members" too late undertook to restore by themselves the belittled reputation of science. In just four years of their rule (1933–1936), nearly 40 percent of university professors were fired. Many others, fearing racial persecution, left Germany. Among the "outcasts and pariahs" were the leading physicists of the country, including the creators of the American atomic bomb.

Here and now, the largest scientists followed with apprehension the new actions of the authorities. Professor Harteck generally considered their intervention a disaster. When he heard that it was decided to build the reactor in Berlin, he guessed that his own experiments in Hamburg would be put to an end. Meanwhile, the experiments with the centrifuge were finally coming to an end. On June 1, 1942, together with Dr. Groth, he separated xenon isotopes. Next in line was

uranium hexafluoride. On June 26, he writes to the Army Ordnance Department, pleading for support. Uranium machines can be of two types, he says. The first type machine consists of five tons of conventional uranium metal and five tons of heavy water. The second type machine contains less uranium and heavy water, but the uranium is enriched with the U-235 isotope. Experience will show which of these machines is more expedient to build. However, it should be noted that the machines of the second type are more compact and therefore it is more convenient and easier to equip combat vehicles with them. In addition, their principle of operation is close to that of a bomb. Until now, however, enrichment of uranium-235 seemed to be an insoluble problem. And now Groth's experiments with the ultracentrifuge are encouraging us, and if they are successfully completed, he concluded, we can "with all our energy take up the creation of machines of the s

In early August 1942, the centrifuge drum was filled with uranium hexafluoride for the first time. During the first experiments, the degree of enrichment of uranium-235 was 2.7 percent. Four days later, the speed of the centrifuge was increased; the ratio rose to 3.9 percent. Although Harteck hoped for the best, these figures still meant something - especially since their modesty was probably due to the presence of some impurities. Heisenberg's calculations showed that it was enough to enrich uranium-235 by 11 percent, and then the heavy water in the reactor could be replaced with ordinary water. Well, in order to bring the figures to 11 percent, it is necessary to build a battery of centrifuges and enrich uranium step by step.

Both Professor Esau and the first marshal among professors, Goering, liked the idea. However, Ezau - let's give him credit - did not want to bring the idea of "uranium enrichment" to its logical end - to the creation of an atomic bomb. No, he was not a defeatist and a pacifist, he only loved the peace, honor and worldly blessings bestowed on the party leader, and did not agree to exchange them for intense, hard work. When Professor Haxel started talking about the "uranium bomb", Ezau immediately yelled at him: "Don't you understand?!. If the Fuhrer is interested in her, we will all sit behind barbed wire until the end of the war and make this damn bomb! No need to talk about it anymore, let everyone think that "uranium

machine” is the true goal of our project, and then how it will turn out ... ”So
far, it has not worked out with the“ uranium machine ”. Heisenberg believed that 5 tons of heavy water were needed to start a chain reaction in a reactor. By the end of June 1942, the factory in Rjukan produced only 800 kilograms, that is, only a sixth of the norm. (Recall that for two years now the factory has been in the hands of the Germans. How long did they have to wait?!)

In mid-July, Diebner, Berkei, Harteck, Bothe and Heisenberg discuss whether a similar factory could be built in Germany. They remember that there is an installation near Munich that can produce up to 200 kilograms of heavy water per year. But they work with ordinary hydrogen. And if you enrich it with deuterium? There is such a method! Here, however, Harteck intervened, recalling that the energy costs would be very high, but they did not listen to him. On the contrary, they also remembered the hydroelectric power station in Merano (Northern Italy), where the production of heavy water can also be deployed. “Up to one and a half tons per year!” It was decided to act in all directions, because "the production of heavy water, as before, is a paramount task."

But with other raw materials - with uranium - things were a little better. Metallic uranium was recovered from its oxide. The Frankfurt firm "Degussa" was engaged in this. Its capacity would be enough to produce a ton of uranium every month. However, the annual reports are depressing: 1940 - 280.6 kilograms of uranium were produced; 1941–2459.8 kilograms; 1942–5601.7 kilograms; 1943–3762.1 kilograms; 1944–710.8 kilograms.

The technological process was simple, and there are only two reasons for the failures. Firstly, shortages in raw materials, and secondly, by the end of 1942, the uranium project was already considered a second-rate affair, and the Degussa company began to experience supply shortages because of this. It was difficult to get spare parts, new vacuum pumps, copper for transformers, etc. The uranium project was slowly suffocating in the grip of centralized supply.

Let's say a few words about the smelting of metal plates from powdered uranium. After all, the "doyen of German physicists" Heisenberg was already convinced that it is better not to deal with the powder. The smelting method was primitive. In the plates quite often there were cavities and foreign inclusions. But the worst was yet to come. From the
beginning of 1940, Professor Heisenberg was "scientific consultant" of the Institute of Physics in Dahlem, which, of course, did not live up to the reputation of such an illustrious scientist. In the summer of 1942, Weizsäcker and Wirtz finally persuaded the leaders of the Kaiser Wilhelm Society that Heisenberg should be regarded as the "actual director" of the Institute. It was impossible to do without a reservation, since the recent director of the Debye Institute, having left for America, never resigned. Heisenberg could only "carry out his duties", which he began to do from October 1, 1942.

But once here, he fell more and more under the influence of his two "benefactors", two politically engaged physicists - Wirtz and Weizsacker.

As for the former "i. O. director", Dibner, who had been plagued by failures all year, he left for Gottow, where the ground forces department of armaments was located, where explosives were usually tested. So
Heisenberg and Dibner became enemies. The supporters of both sent Goering, the new "arbitrator", one libel after another.

Dr. Dibner “does not have a higher education at all, he did not receive a doctorate. Only constant appeals to paragraphs on non-disclosure of state secrets allowed him to stay here, although his inability to this kind of occupation was known to everyone.

Heisenberg, another clique gloated, "is the chief of this theorizing trend ... even today, in 1942, honors the Danish half-Jew Niels Bohr, calling him in one of his writings the greatest genius."

Scientific battles were then fought with such shells.

Of course, Dr. Dibner was not a great theoretician and should not be compared with Heisenberg. But he was a good experimenter and had a sound, practical mind. Heisenberg had long annoyed him with his slowness, and the now retired Dibner decided to build the reactor himself. For this he came to Gottov.

His model of the reactor differed sharply from Heisenberg's. Dibner believed that from uranium

it is necessary to make not plates, but cubes so that uranium is surrounded on all sides
moderator.

But for his experience, Dibner did not manage to get hold of either metallic uranium or heavy water. He used uranium oxide (25 tons) and paraffin (4.4 tons) as a moderator. Inside the aluminum cylinder, laboratory assistants built a "honeycomb" of paraffin and filled each cell with cubes of uranium oxide (there were 6802 of them). Finally, everything was "packaged". The aluminum colossus was lowered into a concrete pit filled with water (it served as a reflector). The reactor had various tubules in which neutron sources and instruments were placed.

The result of this "cyclopean" experiment turned out to be negative: there was no neutron multiplication. One should not have expected otherwise, since the experiment was carried out with uranium oxide and paraffin. But the advantage of metal cubes over plates was obvious. At the end of November 1942, the researcher prepared a secret "Report on the experiment with uranium oxide and paraffin, carried out at the range of the armaments department of the ground forces." Meanwhile, in Dahlem, they started their grandiose experiment. They were preparing to

spend 1.5 tons of heavy water and 3 tons of uranium plates on it. In the meantime, long discussions, clarifications, etc. dragged on. How to protect the institute from an explosion? Heisenberg already had a bad experience. How to avoid corrosion of uranium, its erosion by water? Gilding uranium plates? But gold absorbs too many neutrons. It would be possible to apply a coating of nickel and chromium, but it must be stable and uniform. Other options were discussed and rejected. Use heavy paraffin instead of heavy water - paraffin in which hydrogen atoms are replaced by deuterium? But the fission of uranium produces alpha particles, and each of them would destroy up to a hundred thousand paraffin molecules. It seems that none of the Germans guessed that the plates could be placed inside metal "shells", resistant to corrosion and absorbing neutrons little.

The Americans went exactly this way. And on December 2, 1942, the world's first nuclear reactor was launched in Chicago, containing 5.6 tons of uranium, 36.6 tons of uranium oxide and 350 tons of the purest graphite (moderator).

In the summer and autumn of 1942, the German Research Council was occupied by the reorganization that began on June 9th. The new members of the presidium, already burdened with many responsibilities, could not cope with the tasks assigned to them. Letters sent to them often lay unanswered for months. Speer, who knew how to "eloquently remain silent," and Rosenberg especially sinned with slowness. Discord among German physicists grew. Work on the "uranium project" was carried out more and more disorderly, more stupid - and rightly so, since 21 ministers of "average education" and "zero point zero" professors undertook to lead them. And here is the result: if in 1940-1941 the German nuclear scientists were noticeably ahead of their American counterparts, then in 1942 this advantage

disappeared. The year ended with the triumph of US physicists - recent immigrants from Germany, Hungary, Italy.

However, this reorganization had its advantages. Interest in the "uranium project" has awakened in some departments that were far from it before. So, the Navy wanted to equip submarines with reactors. Required indicators: action radius - 40,000 kilometers, fuel weight - 1 kilogram of uranium. It remains only to investigate the previously unknown properties of uranium: for example, its corrosion resistance at high temperatures. In general, the by-products of the work of nuclear scientists were of interest to many. The industry

needed powerful neutron sources for non-destructive testing of materials; medicine - in radioactive isotopes and knowledge of the biological and genetic consequences of radiation; aviation - in new luminescent paints, and even the postal ministry expected some benefits from the work that the inventive seeker of "sponsors" Ardenne was engaged in. By the way, in October 1942, representatives of the missile range in Peenemünde turned to the Postal Ministry. They were interested in whether a nuclear reactor could become a rocket

engine.

Things were better with the equipment. A small cyclotron worked in Bonn, a large one at the Joliot-Curie Institute in Paris. Three more cyclotrons were mounted: in Heidelberg,

Berlin and Leipzig. That's just in the United States by that time there were already 37 cyclotrons, including a huge accelerator in Berkeley. Captured

devices also appeared: for example, the Germans took out a pulse generator from Kharkov and a Van de Graaff generator (however, both of them were damaged).

On November 24, Professor Esau approached the new authorities with a proposal to centralize all work on the "uranium project". Professor Rudolf Menzel, one of Goering's assistants, explained to his boss: all the world's leading physicists are engaged in uranium research, and especially the Americans. “This problem is so important that it cannot be neglected even during the war. In addition, some of its side aspects are of direct military importance.

Menzel suggested to Goering that Professor Esau be appointed as his "plenipotentiary for nuclear physics". Although Esau is not a nuclear physicist, he is still well versed in this science, but, most importantly, he is a neutral figure. “And this is important,” Menzel emphasized, “because due to the fact that a number of specialists in nuclear physics are endowed with a“ mimosa sensitivity ”,we would hardly have been able to avoid squabbles and squabbles if any eminent scientist headed the working group of physicists" .

In the Wehrmacht, as in the postal ministry, Ezau really appreciated. But in general, neither he nor Menzel were popular either among scientists or in other circles involved in our history. So, Reichsminister Speer did not notice the diligence of the campaigner Esau at all. There were other detractors as well. As soon as Menzel talked about the "mimosaic sensitivity" of scientists, an anonymous letter lay on Goering's desk, explaining to the marshal all the harm that Menzel had done to physics.

> “In physics ... today everything is run by a circle of people who once rallied around Einstein and his theory of relativity ... It is indicative ... the capture by the head of this theorizing direction, Heisenberg, of the Emperor Wilhelm Institute of Physics, the former field of the undisputedly largest experimenter - Professor Debye. Menzel, continued the stern invisible critic, for no reason expels from the institutions the old, proven "Parteigenosse" who have been fighting Einstein for twenty years now. The worst thing is the “grand scam with an imaginary uranium machine” that he encourages.

However, the "private adviser to the leader" was late. Goering has already signed the appointment order Professor Esau as the head of the entire German "uranium project".

> ⋯ I appoint you as my authorized representative for all matters of nuclear physics and I ask you to pay special attention to the following questions: 1.
> Continuation of work in the field of nuclear physics for the purpose of useful use of uranium nuclear energy. 2.
> Production of luminescent paints without the use of radium. 3.
> Production of powerful neutron sources. 4. Study
> of safety measures when working with neutrons. Heil, Hitler!

Nevertheless, the whole next year, German physics was in a fever - Esau had too many enemies. People with "mimosa sensitivity" are more and more mired in squabbles and squabbles instead of subordinating their forces, their will to a single goal. The reorganization brought only harm. The troubles of the Aryan Esau began

with his appearance, which betrayed his peasant roots, with his manner of speaking, in which a provincial East Prussian origin was easily guessed. This "strong man with a powerful, peasant skull" (as one of the newspapers spoke of him) could easily be mistaken for some "swineherd from near Koenigsberg." However, appearances were deceiving. He was a good specialist in high-frequency technology - but ... not a nuclear scientist. It soon became clear that Esau, although he zealously tried to conform to the new,

the imposing title bestowed on him by the Reichsmarschall - "commissioner for nuclear physics" - still had little respect for uranium reactors. So, he once told Harteck that he would supply him with everything that he required, but let Harteck first build a reactor and show him - "with the help of an ordinary thermometer" - that the temperature had risen at least one tenth of a degree.

Shortly before his appointment, Ezau generally talked about the fact that the entire project should be to cover up, according to the diary entry of Dr. Erich Bagge dated December 4, 1942:

> "Meeting in the Office of the President of the Physical-Technical Society, State Councilor Esau. On the part of the physicists there are Dibner, Basche, Clusius, Harteck, Bonhoeffer, Wirtz and myself. The chemists Albers, Schmitz-Dumont, and another, third, reported on the results of their work on the preparation of vaporous uranium compounds 10 . Esau outlines measures to reduce work in January and February 1943.

Obviously, he believed that the solution of this problem did not contribute to success in the war. And science must be economical!

In the Emperor Wilhelm Society, which united academic institutions, Esau's appointment was also met with irritation. Albert Speer trusted the opinion of scientists and therefore treated the "upstart and promoter" with hostility. In general, at the end of 1942, Speer clearly expressed his attitude towards nuclear physics. He awarded the coveted "degree of urgency" DE to the institutes headed by Heisenberg, Bothe, Hahn and Rajewski. At that time, even such secret projects as work on V-1 and V-2 rockets did not receive this prestigious category. On February 4, 1943, the chairman of the Kaiser Wilhelm Society, Dr. Albert Vögler, invited Esau and Menzel to his

place. He invited them to "determine" what kind of work in the field of nuclear physics his society would take up, and which - Ezau. Apparently, Fegler did not want to lose the eminent scientists who worked for him at the Institute of Physics in Dahlem, and in this stubbornness he was encouraged by Speer, who promised any support: money, raw materials, equipment. However, this "section of physics" did not bring relief to the rivals. A few weeks later they met again to judge, dress up, and coordinate. So, in this most difficult time,

in the winter of 1942/43, work on the "atomic project" was suspended. Their recent members were languishing from incessant strife. Meanwhile, in the United States, as we

have already said, the world's first nuclear reactor began to operate.

And then there's the Allied saboteurs disabled a heavy water plant in Norway. And yet,

despite the sabotage in Ryukan and the organizational confusion in the camp of the German nuclear scientists, their successes by the end of 1942 were obvious, and the prospects were encouraging. Researchers started a new big experiment with a uranium reactor; they realistically imagined the technical difficulties that awaited them, and they had sufficient industrial capacity to process uranium. However, the fate of the nuclear project was already "hanging in the balance." Now that

the war was dragging on, the favor of the authorities could only be hoped for if the reactor finally started working. Otherwise, the project will fall into the category of third-rate programs, which means that scientists will face many restrictions, lack of funding, supplies, and other "charms" that are so familiar to their Russian colleagues today, the descendants of heroes and winners. And now the supply of heavy water from Norway has stopped. How miscalculated the German physicists, relying on only one factory in Ryukan, so vulnerable to saboteurs! They were sure that

every year they would receive up to 4 tons of water, and "this truth is as unshakable as the Third Reich." Now they got their "nuclear Stalingrad".

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10 scientists were still looking for a replacement for the notorious uranium hexafluoride - approx. ed.

In November 1942, Dr. Wirtz rushed all over Europe in search of suitable factories that, after a small and quick refurbishment, could start producing heavy water. It seemed to him that only two Italian factories engaged in electrolysis seemed more or less suitable: near Merano and in Cotrona. However, the technology they used was not suitable for the production of heavy water, and their capacity - 68,000 kW - was half that of the Norwegian factory. Professor Harteck, turning

to the armaments department, advised to send two or three physicists to Merano under the guise of "civilian seconded" so that they would be convinced whether the electrolyzers available in Italy could be used as effectively as those at the Norsk-Hydro factory . He himself believed that in these Italian factories it was necessary to bring the heavy water content to only one percent, and then send the concentrate to Germany in order to increase the heavy water content in it to one hundred percent. This measure is more cost-effective than it seems at first glance. In the spring of 1943, Harteck

and Esau personally inspected the plant in Merano, and Harteck, personally looking after his companion, was convinced that he had little faith in the success of the German nuclear scientists. And therefore, he is not very eager to help them, although he is flattered by the powers received from Goering.

Meanwhile, at the end of March, another important source of funding was depleted - the armaments department of the ground forces ceased its participation in the "atomic project" and even, contrary to all agreements, refused to allocate two million Reichsmarks already included in the budget. The shadow of Stalingrad fell ominously on the plans of

German physicists. The damage caused by this blow will become more obvious if we consider that Professor Esau, who directly supervised the "atomic project", allocated the same amount for 1943 - two million marks. Most of them (600,000 Reichsmarks) went to the construction of ten double ultracentrifuges for the enrichment of uranium-235. Experiments on the separation of xenon isotopes were successful, and on March 2, 1943, the first experiment was carried out with uranium hexafluoride. It was possible to enrich it by 7 percent, and therefore it was decided to manufacture several such

centrifuges at once. Other items in Professor Esau's ledger were: “Research on uranium reactors, expenses for the production of uranium metal – 400,000 marks. Heavy water, construction of an industrial plant in Germany - DM 560,000. Studies of luminescent paints (for the "Luftwaffe") - 40,000 marks. Study of methods of protection against radioactive radiation - 70,000 marks. Expenses for high-voltage equipment capable of serving as a source of neutrons - 50,000 marks. Chemistry and corrosion of uranium - 80,000 marks. Unforeseen expenses, special items of expenses - 200,000 marks.

On April 17, 1943, the damage to the Rjukan factory was finally repaired. But you had to face the truth. “The situation in Norway is such that, despite all the measures taken, a new act of sabotage is possible,” Esau reported. “Therefore, in case the factory in Norway is destroyed again, we need to establish at the Leinawerk at the Farbenindustry concern ... a highly concentrated heavy water produced in Norway 11.” Let's agree for him: if the factory in Norway is completely

destroyed, heavy water of low concentration will be delivered to the Leinawerke plant from Italy, from Merano, because in an atmosphere of strict secrecy, negotiations began with the management of the local factory on the manufacture of heavy water there.

"In any case, we will have at our disposal a sufficient amount of heavy water to continue the experiments mentioned." Esau, as befitted an experienced "court courtier", instilled optimism in the authorities.

Optimism encourages over-comfort. Germany could establish a full cycle of heavy water production. Experts offered as many as four technological methods, but they were not listened to. Why distract the much-needed during the war

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11 small concentration

funds, since we will "have at our disposal a sufficient amount of heavy water"? Esau spoke lies through her mouth. In 1944, when the flattering "courtyard" was dismissed from his post, the Germans realized it, but it was too late. Speaking of

the surrender of the armaments department, one should mention Dr. Dibner, who served him faithfully for a long time. The doctor was allowed to continue his experiments in the laboratory in Gottow, but was asked to leave the offices in the mansion at Hardenbergstrasse 10, which belonged to this department. Now Dibner obeyed his recent rival and implacable enemy - Professor Esau.

Preparing a new experiment, Dibner turned to the Degussa factory, which now produced metal plates (19x11x1 cm) instead of powdered uranium. He asked to make a batch of uranium cubes with a side length of 6.5 centimeters (this was suggested to him by theoretical calculations). However, I had to be content with the mentioned plates. To make the most of the metal, he made smaller cubes from them (the length of the edge is 5 centimeters). He was philosophically calm about the fact

that he was forced to work with "offcuts" of materials left over from the experiments of the "venerable scientific guard" - Heisenberg and others like him. He - after the overthrow - was limited in funds, constrained in opportunities, but he was still a brilliant experimenter and did not get lost in the most difficult circumstances, coming up with new, unexpected moves. A year ago, jealously watching Heisenberg's experiment (powdered uranium

and heavy water inside an aluminum ball), he thought that because of this aluminum shell, neutron multiplication could not be accurately measured. Now he decided to do without it altogether. We need to… freeze heavy water, and build a lattice of uranium cubes inside this ice block. And so it was done. 232 kilograms of uranium and 210 kilograms of "heavy ice" were enclosed in a paraffin ball with a diameter of 75 centimeters. The experiment was carried out at a temperature of minus 12 degrees.

Dibner's hunch was confirmed. The "neutron multiplication factor" was much higher than the experiments of his colleagues and, in particular, the Leipzig experiment of Heisenberg (L IV) showed. It also seemed that the scheme proposed by Dibner (a lattice of cubes of metallic uranium) turned out to be better (or at least not worse) than the traditional scheme (alternating layers of

uranium and moderator). Dibner's group was preparing two new experiments to find out how reactor size and temperature affect neutron multiplication. In the first case, the experiment was carried out at normal temperature, but the reactor was the same size as before. In the second case, the reactor was doubled, but the temperature was not changed. “I have no doubt that by increasing this design, we would certainly get a self-excited reactor,” Dibner later wrote. However, Professor

Heisenberg, "the supreme arbiter of German physics," was slow to acknowledge Diebner's success. Speaking at a meeting in Berlin on May 6, 1943, just a few days after such a brilliant experience, he in every way extolled his (with Depel) achievement a year ago, and interpreted Diebner’s work as follows: “All his merit is only that he used a better equipment, which helped him achieve the same results as we do. Heisenberg is always right, and if wrong, see the beginning of the phrase.

Most importantly, Heisenberg did not even mention that the design of the reactor in "this" Dibner was completely different. Preparing for his grandiose experiment, the professor did not intend to follow the lead of the "disgraced physicist" and change anything in the scheme. It's all about "measuring instruments, not geometry."

In passing, we note one more delusion of the great scientist. He believed that in the reactor, most critical case, if you forget 12 thermal equilibrium would be established by itself. In the about cadmium regulators, things will end very badly. Today we know about

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12, that is, the dimensions at which a self-sustaining nuclear fission reaction of fuel can still be carried out - approx. ed.

this. Hensenberg did not know this. And therefore, one should have expected
the worst ... The meeting at which Heisenberg spoke was held within the walls of the German Academy of Aviation Research. In addition to him, they listened to Otto Hahn (nucleus fission and the significance of this discovery are outlined), Professor Clusius (methods for the separation of uranium-235 isotopes), Professor Bothe (projects of cyclotrons and betatrons). But the "chief of all German nuclear physics", Aryan and party member Esau, was careful not to come here. The leaders of the Reich and, most importantly, the Fuhrer did not like this academy - all the more so a month ago, Professor Karl Ramsauer, chairman of the Physical Society, used the local podium to scold the authorities for interfering with normal scientific research in the country. Unheard of arrogance! Therefore, Abraham Esau, who zealously echoed the shouts of the “powerful ones,” did not appear before the eyes of his subordinates. Other important people did the same prudently, starting with Field Marshal Milch. Heisenberg spoke not only about
the experiments of his obstinate colleague and not so much about them, but about the device of the atomic bomb. His words, as always, were accessible and understandable to the most unprepared listeners. Here he carefully shows a slide that shows what happens if you "make a large amount of uranium-235." Neutrons will begin to multiply incessantly. If a piece of uranium-235 is large enough, then so many neutrons are formed inside it that they will not have time to leave the surface of the metal. Most of the matter will instantly split. Everything will take a fraction of a second, and in that fraction of a second an incredible amount of energy will be released. There will be an explosion.

Now it is clear, concluded Heisenberg, why the successful experiments with the ultracentrifuge conducted last year by Professor Harteck and other recent experiments are so important. All because during them it was possible to enrich uranium-235.

Supporters of the German "atomic bomb" could only regret that prominent military and politicians did not hear this intelligible and fascinating lecture.

In the spring of 1943, it became clear that the recent reorganization did not bring any benefit to science. There was little use for the "presidium", which included 21 ministers, senior officers and leaders of the party, including Himmler, but where there was not a single
scientist. Scientists now tried not to compromise themselves by close relations with the party of victorious National Socialism and did less for its final and irrevocable victory in the war than the scientists of any other power hostile to the Nazis did for their victory. And how could they not move away from this power? Under her rule, all the theories underlying modern physics were declared "Jewish" and, therefore, "decadent" and "pernicious". Brilliant German theoreticians could not work normally, because their opponents were ready to brand any of their original thoughts as "imbued with a Jewish spirit." Could German physicists hope that they would be able to master the energy of the atom, if the party rejected the "impious" private theory of relativity of the "Jew Einstein"?

“According to their wickedness, let them be judged.” In this scientific battle, the genius of Einstein prevailed, and the atomic bomb was created in
his new country - the United States. By the way, how did prominent German scientists feel about such a “party interpretation” of science? Some, like Weizsäcker, who was not born into a diplomat’s family for nothing, tried to appease the irreconcilable Nazi anger, others, like Max von Laue, bravely challenged the creators of the “new scientific canon” and stirred up the old one, bringing the crossed-out names back to life. In a letter dated May 22, 1943, Professor Menzel admonished the great physicist, who received the Nobel Prize thirty years ago, in a mentor tone: "German researchers are clearly distancing themselves from Einstein's theory." (Laue, invited to lecture in Sweden, spoke reverently about this theory instead of keeping "a huge distance.") Weizsäcker, learning about this story, advised Laue to hush up the "oversight", replying that the special theory of relativity "in was mainly developed in the writings of the Aryans Lorentz and Poincaré. However, Laue did not compromise and sent a “provocatively indecent” article on the theory of relativity to one of the scientific journals. “Here is my answer,” he wrote to Weizsäcker. Meanwhile, in the United States, the construction of three
plants for the manufacture of

heavy water. In one of the laboratories in New Mexico, a group of scientists led by Dr. Robert Oppenheimer had already discussed the design of a future atomic bomb.

In the summer of 1943, rumors circulated in Germany about the most diverse types of "wonder weapons" that Reich scientists were allegedly working on. These rumors leaked "from the bowels of the SD" and depicted cannons capable of firing at 600 kilometers, "rocket shells", giant bombers. One of the official reports states that in order to raise morale, stories should be launched into the people about a new type of bomb, which will be so large that “the largest aircraft can carry only one such bomb on its board. Twelve of these bombs, designed according to the principle of splitting the atom, are enough to destroy a city in which a million people live. British intelligence worked quickly, and in the same month it was reported

to London that the Germans had created a new missile. Its flight range is 800 kilometers (theoretically) and 500 kilometers (in practice). The rocket weighs 40 tons. Length - 20 meters. A third of its length can be occupied by explosives created according to the principle of "splitting the atom". It can already be seen at the Peenemünde training ground. As you can see, the Allied intelligence even

exaggerated the danger emanating from the Third Reich. The Germans themselves very vaguely and vaguely imagined the activities of nuclear physicists who lived on the other side of the front. Their intelligence did not have live, concrete details. The most prominent participants in the German atomic project, speaking about the activities of their opponents and competitors, could resort only to the most general phrases, only colored in different tones depending on their attitude to this project. So, at the same meeting in Berlin, Heisenberg said that "in other countries, in particular in the United States", "huge amounts of money" have been invested in solving this problem.

Professor Menzel, sending Abraham Esau's first semi-annual report to Goering, supplied him with the following reassuring marginalia: although these works may not lead to the creation of new types of explosives or new types of power machines in the near future, we, on the other hand, can be sure that that the hostile Powers cannot surprise us in this area with any surprise. In June 1943, the Germans again began to receive

heavy water from Norway (a total of 199 kg was delivered this month). However, only 141 kilograms of heavy water were received in July, since the factory management, contrary to all German plans, decided to limit its release. The following happened. The release of heavy water was not an end in itself for Norsk-Hydro. Here, first of all, hydrogen was obtained by electrolysis, it was needed for the manufacture of artificial ammonia. Ammonia was supplied to the Heroya factory, which produced fertilizers. On July 24, the Americans bombed this factory, and therefore the Norwegians reduced the production of ammonia, and hence hydrogen and heavy water. The German authorities were outraged by the arbitrariness of the mercantile

Norwegians and demanded that heavy water be released no matter what, and that excess hydrogen that no one needed was simply bled into the air. However, the general director of Norsk-Hydro, Björne Eriksen, with desperate persistence, refused to obey the order and “throw away” expensive gas. Moreover, he recommended to the company's board of directors that the production of heavy water be completely stopped, since its production makes the factory a desirable target for enemy aircraft. Later, despite the most stringent demands of the occupying authorities, Eriksen,

threatening his resignation, forced the board of directors to take this terrible decision for German nuclear physics. Of course, the “masters of the new order” prevented the catastrophe from happening. Eriksen

was arrested and sent to a concentration camp, where he stayed until the end of the war. The decision was reversed. But nuclear physicists could not count on a calm future: the production of heavy water was truly the “weak link” in the German atomic project. Everything threatened him: the obstinacy of the directors, and the audacity of the saboteurs, and the pedantry of the allied aviation.

In the summer of 1943, massive allied air raids began to interfere with work on the atomic project inside Germany. Every now and then bombs fell on the laboratories in which German physicists were preparing for the most important experiments. However, difficulties and so it became all

more. So, in the same summer, due to a mere lack of seals, experiments in Professor Harteck's laboratory ended in failure twice: both times the centrifuge drum exploded. Finally, in July 1943, due to incessant bombing, the laboratory had to be moved to Freiburg. So several months were wasted. Just as unsuccessfully were the tests of the isotope lock, invented by Dr. Bagge. In the summer of 1943, tests of its prototype began. Silver

isotopes were separated instead of uranium. The light isotope of silver was enriched by 3–5 percent. But the experiments failed

to finish.

In August, air raids began on Berlin. Throughout September, Bagge was engaged in the evacuation of a significant part of the Institute of Physics: about a third of the laboratories moved from Dahlem to the city of Hechingen in southern Germany. Now scientists had to constantly shuttle between Berlin and southern Germany. Professor Heisenberg remained in the half-empty Berlin institute: he could

not do without the local high-voltage installation. In addition, in a bunker located near the institute building, Heisenberg, together with Professor Bothe, continued to prepare for his grandiose experiment with a uranium reactor. Berlin was constantly bombed, the city shook from explosions, but this did not bother scientists.

In mid-October, another secret meeting was held in the premises of the Physico-Technical Society. It was led by Professor Esau. Several speakers (Esau, Witzell, one of

Speer's assistants) spoke of successful experiences with the enrichment of silver ions using an isotope lock. Bothe spoke about an experiment with small reactors, consisting of uranium and heavy water, and the thickness of their layers varied constantly. It turned out that in the future reactor, the weight of uranium and heavy water should be the same. If the thickness of the uranium plates is one centimeter, then they will be separated by a layer of water 20 centimeters thick.

Professors Pose and Rexer reported "experiments with various geometric structures consisting of uranium oxide and paraffin." They found that of all possible shapes, uranium plates are the most unsuitable. (The disgraced Dibner, who preferred to deal with uranium cubes, knew about this.) It was uranium cubes that proved to be the best, then rods. The plates, on the other hand, were very difficult to manufacture and protect from corrosion. However, Professor Heisenberg, preparing his grandiose experiment in the Berlin bunker, did not think of abandoning the plates. Let all the experimenters of the country rebel against them, his theoretical mind justified them: the fact is that it was much easier to calculate a reactor made up of simple metal plates than a reactor built from many cubes. But the experiment was postponed: metallurgists could not cast heavy uranium plates. I had to wait until a new melting furnace was constructed. There was another problem, also mentioned by the speakers: they could not find a suitable coating that protected uranium from corrosion. Esau's laboratory

experimented with coatings of aluminum and tin, but the work had to be stopped: there was no uranium of sufficient purity.

In November 1943, Auer employees discovered that uranium plates could be protected with phosphate enamel. She withstood a temperature of 150 degrees and a pressure of five atmospheres. At the end of the year, the company finally began to cast huge plates commissioned by Heisenberg. However, at the same time, the firm "Auer" also produces cubes of uranium

for Dibner. He planned two new experiments, and in one case he wanted to use twice as many cubes as in the other. This time he hung the cubes on thin wires of light alloy, lowering them into heavy water.

In the first case, the reactor was the same size as a few months ago - in experiments with "heavy ice". Dibner decided to "control" himself - however, this time he used not 108, but 106 cubes. They hung in "clusters" - eight or nine pieces in a row. The same distance separated each cube from the twelve neighboring ones - 14.5 centimeters. Each cube was coated with a new, newly developed polystyrene varnish. Professor Haxel examined this varnish. The absorption of neutrons was practically equal to zero.

A total of 254 kilograms of uranium metal and 4.3 tons of paraffin (reflector) were used. Dibner originally placed the radium-beryllium neutron source inside the empty reactor shell. This rod was held in place with a small magnet placed at the end. The scientist measured the intensity of neutron radiation on the surface of an empty reactor, and only then placed "clusters" of uranium cubes inside and poured 610 kilograms of heavy water. When the turn of the second experiment came, it turned out that the company managed to produce only 180

cubes instead of 420 - all forces were taken away by the order of Professor Heisenberg. Then Dibner used cubes left over from past experiments, although these cubes, made up of scraps of plates, were slightly lighter than monolithic cubes (2.2–2.4 kilograms). However, nothing could be changed. Inside the new reactor were 564 kilograms of uranium and 592 kilograms of heavy water. To his surprise, Dibner found

that the number of neutrons leaving the reactor's surface increased by six percent, a promising result. “This figure is significantly better than what the theoretical calculations predicted,” Dibner wrote. He immediately began to prepare a new experiment with a larger reactor to find out what the dimensions of the "self-acting machine" should be. At the same time, he decided to increase the size of the cubes. Now the length of the edge was 6 centimeters instead of 5.

On the night of October 1-2, 1943, the Nazis were going to deport all Jews from Denmark. One of the employees of the German embassy in Copenhagen, Dukvits, learned about this at the end of September. He informed Professor Niels Bohr about the danger that awaited him. In the coming nights, some of the Jews were able to be transported by boat to neutral Sweden, and Dukvits made sure that the patrol boats did not interfere with this operation. Among those who fled was Niels Bohr. The renowned

physicist and his family sailed in a crowded fishing boat. On October 6, in the empty bomb hatch of a bomber plane, Bohr flew from Sweden to London. On the twelfth of October, he was already telling the British everything he knew about the German atomic project. As a result, on November 16, 1943, the allied aviation subjected the Norwegian city of Rjukan to a fierce bombardment.

After inspecting the factory after the bombing, Dr. Berkei informed Berlin that all hope of restoring it should be abandoned. The production of heavy water had to be established in another, safer place.

On the nineteenth of November, Esau informed the Research Council that he would allocate 800,000 Reichsmarks for the construction of a similar factory in Germany. How much time has been wasted! On November

30, Einar Skinnarland radioed to London: the Germans are taking to Germany all the equipment for the production of heavy water, as well as all available reserves of heavy water. British intelligence officers sensibly reasoned: in Germany, electricity resources are now limited, and it is expensive. Therefore, the equipment does not pose a danger, the Germans will not be able to establish a normal production of heavy water. But the accumulated stocks should be destroyed. And they were right. The IG

Farbenindustri concern already had a small pilot plant for the production of heavy water. The unit's code name was "Stalinorgel" ("Stalin's organ"). However, to establish industrial production, a colossal sum was required: 24.8 million Reichsmarks, as one of the engineers calculated. This factory would also absorb a huge amount of raw materials: 10,800 tons of iron; 600 tons of steel alloys; several hundred tons of nickel. Every hour, 500 tons of brown coal would disappear in its furnaces. Esau hesitated, not daring to approve such a wasteful project.

Also, there is an alternative. Dr. K. Geib, one of Harteck's best students, came up with a new way to make heavy water: an ion exchange process at two different temperatures and in the presence of hydrogen sulfide (this method is popular in the USA today). Equipment and electricity costs were lower than with traditional

technologies.

On paper, the new method seemed perfect, but Professor Harteck noticed it nonetheless.

flaw: the corrosive effect of hydrogen sulfide was still unexplored, and to begin detailed studies now, amid military failures, bombing and evacuations, was an untimely thought. I had to act in the old fashioned way, "at the behest of experience."

Another idea came to mind. Each time, her "resurrection" made Esau shudder. If one of the experiments on the separation of uranium-235 isotopes - a centrifuge, a "gateway" - turned out to be successful, then heavy water would not be needed. What would the leaders say then if they knew that "a certain Esau" wasted hundreds of thousands, and even millions of Reichsmarks, building a factory that no one needed? So was it worth it to establish the production of heavy water? The official, who was sitting inside the “Aryan and party member” Esau, thought, is it time to ban everything?

But it was already too late. Concern "IG Farbenindustry" has already built in the town of Leina previously unintentionally approved plant for high concentration (up to 99.5 percent) of heavy water. It was expected that one and a half tons of its semi-concentrate would be processed here, which could come to Germany annually. The calculations were somewhat exaggerated. Now that the factory in Rjukan, Norway, had ceased to produce heavy water, all that remained was to hope for a factory in Merano (Italy), capable of producing only one ton per year of water of very low concentration (about one percent). Meanwhile, the fate

of the projects began to decide the war. Dr. Bagge was already preparing to separate uranium isotopes with the help of his "lock" when, after another bombardment of Berlin, both the isotope lock itself and all its drawings were destroyed. Everything had to be started over again. The next

sufferer was Dibner. He was already preparing a new experiment, trying to estimate the size of the “self-acting machine”, when his enemy and chief Esau wrote to Goering the following: “It was planned to increase the size of the installation, but since the production of heavy water has now ceased, it is impossible to carry out the experiment according to the planned plan.” Moreover, all of Dibner's reserves of heavy water, already approaching success, were confiscated and handed over to the "great Heisenberg", who chose the most unsuitable uranium deployment scheme for his grandiose experiment.

The start of the experiment was delayed. The Degussa firm could not produce the required number of uranium plates. She either suffered from a shortage of components (as if on purpose, one or another of her partner factories ended up under a hail of British bombs), or she used up uranium reserves, urgently making cubes from them (Dibner's order, soon, as we know, canceled). Finally, disaster struck. Frankfurt was bombed all night. The next morning, the Degussa factory shops lay in ruins. There was no question of any production of uranium.

At the end of 1943, Professor Esau, who had headed a rather successful project a year earlier, was dismissed. Work on the project has stalled. There was a lack of raw materials, reliable, proven technologies, and cohesion in the actions of scientists. The few raw materials still available were handed out "according to rank and rank", and not according to the significance of the experiment. The presence of a "theoretical genius" in their ranks made it impossible for a number of brilliant

experimenters to continue their work. On December 2, 1943, Goering signed a decree appointing Professor Gerlach from Munich, who until recently led the development of ... torpedo fuses, as the head of the entire German nuclear program from January 1 of the new year. However, on the side of the professor, so far from the uranium project, were his authority, his even relations with Heisenberg and Hahn (in November they advised him to accept a possible offer), his sober, cynical mind (he considered "bullshit" all invented by the Nazis during war of the “degree of urgency” of scientific projects and, starting to lead one of them, he thought only about how to preserve “pure science” for the country). The Reichsmarshal tried

to heal Esau's wounded pride by the fact that the nomenklatura professor was "thrown to the leadership" of high-frequency studies. Meanwhile, the saboteurs blew up the ferry, which delivered

… to Germany 613.68 kilograms of heavy water (concentration from 1.1 to 97.6 percent). Of the 53 people on the ferry, 27 were killed (including 23 civilians). Dr. Dibner was no longer looking forward to getting heavy water. But he did not give up, but began to prepare

a new, unusual experiment. At the end of May 1944, Professor Gerlach briefly noted in an official report: “The question of the production of nuclear energy other than the fission of uranium

decided on the broadest basis".

In short, several explosives experts, led by Dibner, were preparing for ... thermonuclear fusion. Although their attempt was doomed to failure, it is impossible not to mention it. Details of their work were preserved only in the six-page report "Experiments in initiating nuclear reactions with the help of explosions." The report was signed by W. Herman, G. Hartwitz, H. Rackwitz, representing the laboratory in Gottow, and W. Trinks and G. Schaub from the armaments department of the

ground forces. As early as the mid-1930s, physicists realized that the fusion of two nuclei of deuterium (a heavy isotope of hydrogen) leads to the formation of helium nuclei. In the process of this synthesis, a huge amount of energy is released. If you heat a certain amount of heavy hydrogen to a temperature of a million degrees, deuterium nuclei will very often collide, merging with each other. These numerous thermonuclear reactions are accompanied by a tremendous release of energy. In 1939, Professor Hans Bethe, who emigrated from Germany, published his article "Energy Production in Stars" in the Physical Review, describing in it thermonuclear reactions in the interior of stars. (It is less known that a year before this, the young German physicist Weizsäcker, who has already been mentioned more than once in the pages of the

book, expressed similar considerations.) Yes, these reactions occur in the depths of stars. But is this

> "It has often been proposed," the said report said, "to use the speed of movement of gaseous products arising from the explosion of any explosives to initiate nuclear and chain reactions. The nuclear processes proceeding in this case should enhance the effect of explosives. Although, at first glance, this path seems unacceptable, nevertheless, on the initiative of ... Professor Gerlach, several tentative
>
> experiments that may finally allow us to evaluate this hypothesis with some experimental data.

These experiments were carried out by three scientists from the Dibner group, as well as Dr. Trinks. They used cylindrical trinitrotoluene charges 8 to 10 cm high (their diameter varied). In the middle of the base of each cylinder, a small cone of "heavy paraffin" was inserted - a source of deuterium (cone height - 3.0 cm; diameter - 1.5 cm). A silver indicator was placed under the bottom of the cone to determine the radioactive emission. In the first two experiments, the explosions were so powerful that the steel plate on which the cylinders stood shattered into pieces. "There was not a shred left of the silver foil worth mentioning." Only the third experiment was staged in such a way that a piece of foil was preserved after the explosion. There were no traces of radioactivity in it. It was decided to change the

scheme of the experiment. Reading Hans Bethe's article, Trinks realized that at a temperature of about four million degrees and a pressure of 250 million atmospheres, numerous thermonuclear reactions would begin. In his opinion, it was possible to create a bomb 1-1.5 meters long, operating on this principle. Together with

Dr. Sachse, Dibner's brother-in-law, Trinks prepared a simple experiment. He took a hollow silver ball with a diameter of 5 cm, filled it with heavy hydrogen and overlaid explosives on all sides. The scientists were convinced that the silver would retain traces of radioactive radiation caused by several thermonuclear transformations.

Explosives ignited simultaneously from different directions. Enormous pressure arose, the silver liquefied and rushed to the center of the ball at a fantastic speed of 2500 m/s. We can say that the hollow ball rapidly decreased in size. The smaller its diameter, the thicker the layer of liquid silver became. The inner surface of the ball accelerated faster than the outer. The temperature and density of heavy hydrogen compressed inside the ball reached enormous values. Almost all the energy of the explosive was "focused" on a tiny amount of heavy hydrogen. For a moment, in this smallest point of space, the same conditions arose as in the depths of the Sun. Hydrogen could not escape, a layer of silver interfered. Trinks and Sakse repeated this experiment several times,

but traces of radioactive radiation

not found again. Subsequently, experts, evaluating the experience, believed that the dimensions of the ball were too small.

It seems that soon the scientists lost faith that they would be able to extract at least some practical benefit from these experiments, and they were discontinued. Thus, as we now well know, the Germans missed another fundamental opportunity to create a genuine "miracle weapon" for the Third Reich. Professor

Gerlach was exhausted, methodically making his way through a pile of reports, summaries, articles, reports and abstracts that daily lay on his desk. There seemed to be no end to them. This heap of documents will never be sorted out. Never on the surface of his table was his lumen found. He was buried in paper dust.

Sometimes urgent dispatches came across among these papers. They were decorated with formidable exclamation marks, expressively underlined lines, large, persistently approaching letters, but even these messages were lost among the unread reports. Some orders echoed others or canceled them, but the owner of this paper mass, perhaps, was not familiar with either those orders or others.

In any case, Goering constantly demanded from Professor Gerlach reports on the atomic project, but only two such reports were found in the surviving documents, and their design indicates that there might not have been other reports. So, on one of them, the date “Maerz 1944” (“March 1944”) was forwarded by Gerlach to “Mai 1944” (“May 1944”). Another document, although dated late 1944, is only a pencil sketch - Professor Gerlach did not have time to finish it by the end of the war.

Thus, the ignorant Goering, already sitting in the dock at Nuremberg, probably did not know in detail how it all ended for them there, the nuclear scientists. However,

Gerlach could not be accused of indifference to the atomic project. It's just that the tasks entrusted to him were prohibitive. It was difficult for one person to manage all of German physics in general and the atomic project in particular.

Evidence of this is the diary that the professor kept in the first weeks after his appointment. We see that it constantly runs from Berlin to Munich and back (the cities are separated by 600 kilometers). He literally settles in a sleeping car. Here he urgently meets with Hartek, Esau, Menzel, Schumann. Together with Dr. Butefisch, he goes to Leina, to a factory owned by the IG Farbenindustri concern, and enters laconic lines into his diary: "Heavy water, then Dr. Dibner." And invariably we notice the presence of Dr. Rosbaud, who dine with Gerlach two or three times a week, conversing with him with full knowledge of the matter on the problems of nuclear physics. “He considered me his personal friend,” Rosbaud, who was interrogated by the Americans, would later say. In February 1944, while visiting a plant in Leine, where they were going to make heavy water,

Gerlach caught a cold and fell ill. However, he and the patient still regularly went to work, sitting all night long in his office to the howl of a siren. In Munich, he even stayed in an apartment where window panes were broken and there was no central heating. German cities gradually turned into ruins.

Professor Gerlach's diary also captures the environment in which German scientists were forced to move. This is how the names of Fischer and Spengler come up - two SS functionaries who vigilantly surveyed German science. There were other

guardians from the evil one. One evening Gerlach was called to the telephone. He was ordered the next night not to close his eyes in the oblivion of sleep and not to close his home door, since he would be "visited by several senior SS officers." At night, the door really swung open, dousing the sleepless Gerlach with cold. An SS general rose up on the threshold. “Do you know who Niels Bohr is? Are you familiar with him? What kind of person is he? Is he dangerous? "Yes, I've met him several times," Gerlach replied casually, struggling with sleep and staring at the general's vision. “So,” the night commander continued, “they are looking for Bor to eliminate him. And they already know where he is? Is he still in Stockholm? Trying not to offend the SS man with insufficient reverence, Gerlach noted that the murder of a world-famous scientist hiding abroad would seriously undermine the country's reputation, although it would not bring the end of the war any closer. “You seem to be forgetting yourself,” the officer replied sharply, “you think that

Is human life too valuable? You will soon forget about it!" “Anyway, Bohr is hard to deal with,” the professor tried to reassure his heartless guest. And you can’t find him in Stockholm, he’s probably in the enemy’s lair, in London.” "That's great!" the general beamed. - In London, I have very reliable people. They will arrange everything in such a way that the British will not guess why Bohr died.

However, the inexorable "night general" - a man who appeared from the darkness - was doomed to failure. Niels Bohr has disappeared. He was not found in Stockholm. He was not met in London. He disappeared, disappeared. More precisely, under the name "Mr. Nicholas Baker" he lived in Los Alamos (USA), where he was already developing the design of the American atomic bomb. Meanwhile, British planes began continuous bombing of Berlin. The roar of bombs

mixed with the howl of sirens, the glow of fires - with clouds of dust ... However, in an inconspicuous bunker, hidden near the Institute of Physics in Dahlem, they continued to prepare for a grandiose experiment with a reactor. But the work has become immeasurably more difficult. There were not enough materials, the electricity was constantly cut off, the mood of scientists was getting gloomier.

On the night of February 15, another air raid took place. Gerlach called it "catastrophic" in his diary. The bomb hit exactly the building of the Institute of Chemistry, where Otto Hahn and his colleagues investigated the fission products of uranium. Fortunately, the costly Van de Graaff belt generator (Mattauch worked on it) survived. However, after this incident, the institute was transferred to Teylfingen, a place in southern Germany, 15 kilometers south of Hechingen, where most of the Institute of Physics was already located. Dr. Bagge still remained in Dahlem, seeing no impending catastrophe and believing that "the decision to transfer to Hechingen was taken somewhat hastily" (diary

entry dated 20.02.44). However, at the end of March, "the sky over Berlin" opened up over him. During an air raid, a new model of the "isotope lock" was completely destroyed. On April 1, 1944, Bagge left Berlin with his wife. It was necessary to start everything a third time

at first.

* * *

The production of heavy water also had to be established from the very beginning. Just a few months ago, the leaders of the IG Farbenindustry concern were going to build a plant for the enrichment of low-concentration heavy water. Now these plans were abandoned: it was no longer possible to count on the supply of heavy water from Norway, and the factory in the Italian town of Merano could produce only a few hundred kilograms of water of very low concentration per year. This number was clearly not enough.

In mid-April, Professor Harteck, in an attempt to save the nuclear project, suggested to the authorities four new ways of obtaining heavy water: 1. His own method (distillation of water under reduced

pressure). 2. Clusius-Linde method. Distillation of hydrogen at low temperature. 3. Harteck-Suess

method. Ion exchange at two different temperatures. 4. A completely new method proposed by Dr.

Gibes. Ion exchange

hydrogen sulfide at two different temperatures.

According to him, it was possible to immediately begin the construction of industrial installations operating according to the second or third method. But it was no longer possible to manage with just one factory. "If we manufacture heavy water in one single place, then we should be wary of new air raids aimed only at destroying this production." In general, Harteck continued, it would be better to produce low concentration heavy water as a by-product at a number of existing enterprises. Fearing enemy spies, Harteck did not even name these "promising plants" in his secret report. Finishing the report, he reported that the construction of a small installation, producing up to two tons of heavy water per year, would take only two years. It will cost several million Reichsmarks and will become operational in the spring of 1946. Professor Gerlach was cautious, choosing a simpler and cheaper method. Finally, he

I liked the installation scheme, which will produce up to one and a half tons of heavy water per year according to the Clusius-Linde method. Its cost is only 1.3 million marks. And he also planned to build a low-pressure column for the distillation of industrial wastewater at the Lane plant (IG Farbenindustry concern). Its cost is 1.2 million Reichsmarks. Both installations will also begin to operate in the spring of 1946. In the meantime, for two years, it remains to be content with only those meager reserves that survived after

experiments, sabotage, laboratory explosions and air raids. Only two tons and six hundred kilograms of heavy water remained in Germany. These reserves had to be stretched over two years, and then everything would be fine. However, problems started immediately. The authorities considered the construction of these two installations to be a minor matter. Why are these factories needed, since you are

about to learn how to enrich uranium isotopes? The scientists had nothing to say to this, except to remark: “The question of whether we can produce a sufficient amount of highly enriched preparation 38 so that the production of SH 200 becomes unnecessary is still open” (Hartek).

In America, this dilemma was solved simply: they called both projects "super important." In Germany, however, the authorities, knowing that success in one of the “fields” makes other production unnecessary, and, therefore, all spending on it is superfluous, acted “more economically”: they cut the allocations for both of these projects, so that in the event of the success of one of they managed to avoid significant losses in another. It only slowed things down in both directions.

Among the technologies for enriching uranium-235, scientists were primarily attracted by the ultracentrifuge and the “isotope gateway”, as well as the photomechanical method (Gerlach favored it): light rays of a certain length were directed into a solution of a uranium compound, which separated the isotopes. They finally found a successful coating that protected

the uranium plates from corrosion. It was obtained by immersing the metal in a mixture consisting of a melt of alkali or alkaline earth

metals and cyanide.

At the end of May, Gerlach happily informed his superiors that the first reactor with a critical mass of nuclear fuel would be built in the near future. That's just because of the constant air raids, it was not possible to cast the required number of uranium plates. In the town of Grünau near Berlin - fortunately, the bombing did not really affect it - a new furnace for vacuum casting was hastily built.

Finally, “a number of professors of geology were given the task of reconnaissance for the presence of deposits uranium in Germany" - in case there are interruptions in this raw material.

This is how the Nazi slogan - "German science in the service of war!" - put forward a few years ago, was embodied in life. However, assessing the activities of Gerlach, we have the right to say that he was guided by a different principle: "War in the service of German science!" Taking advantage of his dominant position, the professor boldly supported promising scientific projects that had no military significance, and neglected the needs of nuclear scientists, who could just be useful in the war. Thus, he supported the employees of the Institute of Physics, who determined the magnetic moments and spectra

of atomic nuclei and measured the coefficients of thermal expansion of uranium. These works had a purely theoretical meaning, and only the label "nuclear physics" and the perseverance of Gerlach helped young scientists continue to serenely explore the secrets of the atomic nucleus in those days when the country was approaching disaster. Here is another example of Gerlach's behavior: in Germany there were not enough cyclotrons, which helped the Americans so much in creating an atomic bomb. And so the "chief physicist" of the country - contrary to its military needs - decides to use cyclotrons also for biological and medical experiments.

With such an abundance of goals, needs, directions, the nuclear project itself was somehow lost. It is no coincidence that in 1944, only two of the many programs that made up it had the highest degree of urgency: the "isotope lock" and the production of three corrosion-resistant uranium plates (Auer firm). True, some studies were still generously allocated. So, Harteck was to receive 265,000 Reichsmarks, Otto Hahn - 243,000 marks, Esau - 150,000 marks. But how striking were the contrasts. Dibner was entitled to only 25,000 marks, Dr. Groth, who worked on ultracentrifuges, some 4,200 marks. Total 8500 stamps

was allocated to Heisenberg. Money flowed mainly into industry. They were received by the Auer and Degussa firms, which produced metallic uranium, the IG Farbenindustri concern for the construction of a heavy water production plant, and the Hellige and Anschütz firms, which built prototypes of ultracentrifuges. In April and May 1944, Professor Gerlach updated the

plans for scientific research, and then only the isotope separation work carried out by Professor Harteck was classified as urgent. All other works "a man with a sober, cynical mind", who now ruled German nuclear physics, referred to the lowest degree of urgency - "SS", - although he considered all these definitions "bullshit" and, therefore, he had the right, according to his personal views and without prejudice, to award these long-suffering projects any degree of urgency. He chose the worst for them. When drawing up a plan for the next year, he cut all financial injections. Now none of the projects dared to claim more than 65,000 marks. With such "fatherly zeal" the atomic project was soon to die out safely. A year ago, 3.6 million Reichsmarks were allocated for the atomic project (estimated for April 1944 - March 1945), now some half a million marks, including 69,000 marks for related biological research

(25,000 to Ritzler, 24,000 - Raevsky and 20,000 - Stetter (Vienna) - all names far from the main work on the project) and 46,000 marks for the study of the chemical properties of uranium (Otto Hahn). Centrifuges, reactors, locks and thermonuclear bombs filled with heavy water went almost in one line - a miserable four hundred thousand "for everything about everything." At the end of May 1944, Reichsmarschall Goering approved the peaceful plans of the professor. The construction of the bunker began under Dr. Dibner. The walls, floor, ceiling were laid out with reinforced concrete slabs. To protect people from radiation, the thickness of these fences was two meters. Throughout 1943, the

new head of the department, Esau, was waiting for the experiments with the reactor to begin at any moment. But it was removed before the bunker was ready. The bunker looked like a small swimming pool. It had its own pumping device, a fan, a tank for storing heavy water, and even a room where heavy water could be purified (in the spring of 1944 it was not ready

yet). A special air intake removed radioactive gases. The machine, controlled remotely, moved the uranium fuel. Special "television cameras" made it possible to observe the reactor from afar, without endangering life. Double, airtight steel doors separated this laboratory from other underground rooms, and there was also a uranium processing workshop and laboratories for the study of heavy water.

Living in Berlin became more and more dangerous. The city was bombed every day, and therefore some scientists, not burdened with a close family living - for example, Heisenberg - simply moved to the bunker, day and night there. However, military troubles and interruptions in supply did not allow him to concentrate on work, to which all his free time was now given. Work progressed slowly, however, and the reactor experiment was postponed.

until the end of summer.

As we have already said, neither Heisenberg nor Wirtz, who helped him, heeded Diebner's conclusions and decided that the reactor would consist of one centimeter thick uranium plates interleaved with heavy water. The shell for it was made of a very light magnesium alloy, which absorbed extremely few neutrons (the height and diameter of the cylinder were the same - 124 cm). The scientists wanted to test four plate layouts. Each of them required from 900 to 2100 kilograms of uranium. The reactor was installed upright, and the plates were placed horizontally in it. They were separated from each other with the help of "struts" from the same magnesium alloy. One and a half tons of heavy water was poured into the finished reactor and placed in a pit filled with ordinary water.

The fees were long. The scheme of the reactor - that is, the number of plates and the distance between them - managed to change four times. In the end, after long calculations and estimates, theorists who surrendered to the power of the experiment realized that the distance between the plates should be equal to eighteen centimeters, so that neutron multiplication proceeded most intensively. The only sad thing is that back in November 1943, the Heidelberg physicists Bothe

and Fünfer had already determined this distance empirically, and for several months in a row, exerting all their strength, the scientists of the Heisenberg group "discovered America."

At the beginning of June 1944, the isotope lock was once again ready. This time it was built in Butzbach, not far from Frankfurt. Dr. Bagge decided to try out the model. In just two hours, the bearings seized up. The unit had to be redone. Only a month later the lock was fixed. On July 10, new tests began. The machine was turned on, and it worked for six days in a row. Everything went well. Now German scientists could enrich uranium-235? But no:

“because of the transport troubles caused by martial law, it is impossible to establish a regular supply of liquid air. There is also no uranium hexafluoride.” At the end of August, the plant had to be dismantled, loaded into a furniture van and sent to Hechingen. Dr. Bagge hurried there too. And at that time, in Lichterfeld, Baron Manfred von Ardenne finally built an electromagnetic uranium isotope separator, which worked

on the same principle as a mass spectroscope: electrically charged particles of different masses, falling into a magnetic field, move along different trajectories. To increase the ion density, Ardenne wanted to use a plasma ion source. However, colleagues neglected the ideas of "self-taught and upstart". But in vain! A similar method of separating the isotopes of uranium-235 was used in the United States, creating an atomic bomb. Soviet scientists also used a magnetic isotope separator. Their successes are well known - as is the failure of Ardenne's colleagues. In July 1944, American planes continuously bombed Munich. Professor Gerlach's apartment burned down. The city had no water or electricity. Munich is destroyed. The fire burns all night,” the professor

wrote in his diary of 14 July. Only a week later, on the night of July 21, the raids subsided. That night, a thunderstorm raged over the city. The currents of water extinguished the last fires and awakened the professor, whose bed was also flooded with water. In response, the furious Fuhrer vowed to raze London to the ground with the help of V-1 shells and the V-2, V-3 and V-4 shells that were going to replace them. All summer long, he has another plan on his mind. You can bombard New York. A huge plane

will deliver a small bomber to the US coast, and it will bombard the Americans with bombs, and then, turning around, will land right in the ocean. The submarine will pick up hero pilots. Only on August 21, 1944, he finally abandoned this plan. Atomic bomb in these months

does not occupy his attention.

On July 25, Professor Gerlach left his native ruins and arrived in Berlin, at the Institute of Physics. He did not find any decisive changes. The work of scientists was paralyzed. Berlin was continuously bombed, and there was no question of any normal supply of the "grand experiment". The reactor had to be taken south to the Swiss border, where Allied aircraft were cautious. The professor had already found a place for him: the village of Haigerloch, fifteen kilometers west of Hechingen. In the spring, Gerlach came to this village more than once to admire the blooming lilacs. A river flowed nearby and a rock rose steeply, on which, like a scenery for Wagnerian operas, a castle, a dungeon and a church were molded. There was a cave at the foot of the cliff. Gerlach wanted to place a reactor in it, expanding it somewhat. This work could take several months.

Another thing was more difficult: to get heavy water. "Heisenberg demands two and a half tons" (from Professor Gerlach's notebook). On July 28, the Allies bombed the IG Farbenindustry factory at Lane and completely destroyed it. It seemed that there would no longer be a need to produce heavy water here. On August 11, Gerlach, Dibner and Harteck arrived in Leina: they saw crowds of enthusiasts everywhere, trying to restore something in this devastated city. The equipment for releasing heavy water was all destroyed. The conversation with the directors of the plant, Bütefisch and Herold, turned out to be difficult. In his annoyance, he blamed not the British, but scientists for all the troubles: it was because of your heavy water that we were bombed like that.

Finally, Butefisch delivered a completely unheard-of speech. He spoke of the "gentlemen's agreement" held by the German, British and American industrialists.

Since the Americans and the British had invested heavily in this plant in Lane, they did not intend to destroy it in preparation for their victory. Only something important and very unpleasant forced them to abandon the "agreement". There is only one reason, and it is obvious: these are your plans to produce heavy water here. This is detrimental to our plant.

It couldn't have been more clear. At the height of the war, the IG Farbenindustry concern, relying on the mercy of enemies and observing its own economic interests, sabotaged an important scientific project, although its leaders knew about all the opportunities that splitting opens the military atom.

Rumors about this have been circulating in Germany for a long time. Only their color has changed. It used to be said that German scientists were about to develop a "wonder weapon." Now they were waiting in horror for the Americans - in addition to their "carpet bombing" - to use this "wonder weapon" that destroys entire cities.

In June 1944, Major Bernd von Brauchitsch, Goering's adjutant, came to Heisenberg and told him that rumors from the German embassy in Lisbon were that the Americans would drop an atomic bomb on Dresden in the next six weeks if Germany did not surrender. The worried Reichsmarschall sent his adjutant to immediately look into the mysteries of modern physics and see if this fatal blow was possible. Heisenberg suggested that the Americans were unlikely to have succeeded in building this bomb.

An alarm bell sounded. A new one soon followed. In August the correspondent "Stockholms Tidningen" reported from London:

> “The United States is experimenting with a new bomb. The material is uranium. If the powers lurking inside him can be released, there will be an explosion of power never seen before. A bomb weighing five kilograms would leave a crater one kilometer deep and forty kilometers in radius. At a distance of 150 kilometers of the explosion, all buildings will be destroyed.”

Fortunately for Professor Schumann, who still represented the interests of the military in the atomic project, this publication was not paid attention to "at the very top." And the situation did not have to be distracted by some "fantastic notes". The whirlwind of events was too swift: Stauffenberg, the assassination attempt, the twentieth of July, the arrests, the People's Tribunal. In a torn country, there is no time to believe rumors - the darkest prophecies are already coming true. Professor Schumann himself

would never have tried to convince Hitler of the merits of the atomic bomb. He was a sybarite, he loved music more than physics, and he guessed that Hitler, learning only about the new "weapon of retaliation", would immediately demand from scientists and their superiors to create the same bomb in some six months. And this mythical bomb has been created for several years now and was still far from the goal. Wouldn't it be better for the Fuhrer not to hear about her in the future? Schumann, like Esau, preferred to sleep peacefully.

However, Hitler still heard about the new bomb and even talked about it. On August 5, 1944, the Fuhrer spoke with Keitel, Ribbentrop and the Romanian Marshal Antonescu. He mentioned that four types of secret weapons had already been created in Germany: for example, the V-1, the “flying bomb,” and the V-2, the “rocket.” There is also a weapon of such power that all people will die three or four kilometers from the explosion site ... The

Fuhrer was distracted and did not finish speaking. Marshal Antonescu never saw him again. We will never know what kind of "fourth weapon" the leader had in mind. Perhaps it was idle chatter, an attempt to intimidate their enemies. Hitler imagined the effect of the atomic bomb quite correctly, and Marshal Antonescu, who lived to see the explosion in Hiroshima, had the opportunity to verify this.

On August 29, 1944, immediately after his release, Professor Joliot-Curie was taken to London. During interrogation, he said that during the years of the occupation, several German physicists worked in his laboratory, including Professor Erich Schumann, Professor Wolfgang Gentner, Professor Walter Bothe and others. They repaired the cyclotron and used it for research that had nothing to do with the war. officers

American counterintelligence, who interrogated him, believed that Joliot was hiding the truth from them.

Moreover, in September 1944, after the liberation of Brussels, the documents of the Union Miniere company fell into the hands of American counterintelligence officers, from which they learned that in 1940-1943 the Germans purchased more than a thousand tons of uranium compounds from this company.

This has already caused concern. And on November 24, 1944, having studied photographic reconnaissance data, the British came to the conclusion that German atomic laboratories were located south of Stuttgart, in the Hechingen region.

“Something must be done,” the allies decided. However, history ordered without them. Back in mid-September, work on the nuclear project practically stopped. Factories lay in ruins, laboratories hastily evacuated. During one of the bombings, the workshops of the Frankfurt company Degussa, which produced metallic uranium, burned down. True, the warehouse where the unprocessed raw materials were stored has

survived. They took him on trucks to Reinsberg, a place not far from Berlin. By the end of December, a new plant for processing uranium compounds was built here. As soon as the work was finished, another catastrophe occurred. Soviet troops broke through the Eastern Front and moved to Berlin. The installation was again disassembled into parts and hastily taken to Thuringia, but it never worked again. There, in Thuringia, in the town of Stadtilm, the group of Dr. Diebner had to leave, who, contrary to Heisenberg, created his own original

uranium reactor. Now the scientists have taken up residence in the old school building, whose basement must have been immune to bombs. A huge hole was dug in the middle of the basement to place a reactor with briquettes of uranium oxide, heavy water and graphite. These briquettes - as much as ten tons - they ordered back in May; they were all made by the same Degussa company. In November, all work on the enrichment of uranium-235 was stopped, which was carried out in Kandern, near the Swiss border. This has been expected for a long time. Already in

September, they began to prepare for a future evacuation; even then, Harteck and Bayerle noted that "Freiburg and Kandern lie dangerously close to the front line." However, the ultracentrifuge was not in a hurry to be taken out of Freiburg, installation work continued in Kandern. The authorities were in no hurry to get rid of illusions. They still believed that a turning point would occur in the war. Only on November 24 did they begin to dismantle the laboratory in Freiburg. As soon as the equipment was taken to the town of Celle near Hannover, the fateful day came - November 27th. On this day, Allied aircraft destroyed the whole of Freiburg. The workshops of the Hellige company, which manufactured the centrifuge, suffered greatly.

At the new location, the laboratory was equipped in the premises of a spinning factory, where until recently silk for parachutes was made. Harteck ordered not to leave several prototypes of the centrifuge in the same building. Therefore, some of them were taken to Hamburg and hid in a bunker. So, in anticipation of new

bombings, scientists tried to avoid losses. At the end of 1944, Harteck, Groth, Bayerle and Suhr gathered for a meeting in Hamburg - all four scientists, who were mainly engaged in experiments with centrifuges. Here is the result: "It is necessary to produce UZ III A 13 as quickly as possible." On December 13, Dibner called them, saying that Gerlach had promised that next year this project would receive a new highest urgency, Z1.

Meanwhile, in mid-December, a new life began for Professor Heisenberg, Max von Laue (he turned 65) and many other scientists working in Hechingen, Theilfingen and Haigerloch. All of them were drafted into the people's militia - the Volkssturm. The Nazis were preparing for the last and decisive battle, but for now only Professor Gerlach entered the battle. On December 16, he wrote a letter of protest to Martin Bormann. Was it not Bormann himself who ordered the release of scientists from any duties? Of course, all my colleagues

themselves would be happy to volunteer for the Volkssturm, but now they

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13 ultracentrifuge type III A

ended up in military units located far from the places of residence of the mentioned scientists, and this is strictly prohibited by Bormann himself. “In general, to call into the ranks of the militia even a small part of the personnel, already limited by us to the most necessary limits, means that the work carried out in this laboratory will have to be suspended,” wrote Gerlach, “and after all, these works are among the most important works in field of physics being pursued in Germany at present. I am responsible for ensuring that these works continue in any circumstances. You undoubtedly know that we are talking about works that can decide the fate of the entire war in the most unexpected way. You also know what efforts the Americans are making to solve the same problems that are before us. We are striving to solve them with much smaller forces, and therefore forces must be saved. At the end of the letter, the professor demanded that Bormann intervene and forbid the Stuttgart Gauleiter Murr to use the most valuable scientists for any "sonder actions". Bormann did not reply to his correspondent, but seemed to have ordered Murr to do what the professor asked.

But it was already too late to do anything. Meanwhile, American troops are rapidly occupying Strasbourg. Seven German scientists who worked on the atomic project are captured, including Professor Fleischmann, who developed methods for separating uranium isotopes by thermal and gaseous diffusion. Professor Weizsacker miraculously managed to escape from the city. After studying documents found at the University of Strasbourg, American counterintelligence officers realized that back in 1942, Hitler knew about the possibility of creating atomic weapons, but by August 1944, work on these weapons still had not advanced beyond the initial stage.

Professor Walter Gerlach was a mysterious man. Even his closest assistants, who worked with him on the atomic project, often did not understand the motives of his actions. In particular, everyone wondered why Gerlach allowed two competing teams to work on a uranium reactor at once, barely able to share the meager reserves of uranium and heavy water and more likely to interfere with each other's experiments than to maintain "healthy competition." Or, perhaps, he achieved this by disrupting the creation of the reactor? Or was he trying to save as many scientists as possible from the front and was ready to multiply laboratories, research groups, etc.?

But still, the most plausible answer, perhaps, is this: Gerlach did not dare to judge the scientific dispute with his weighty order, could not make a choice between two projects, did not know which side was right - on the side of Dibner or Heisenberg, and, in order to avoid mistakes, did not take Nothing. In that situation, when there was not enough raw material for anyone, this was a mistake. In addition, the halo that surrounded Heisenberg fascinated Gerlach, deceived him. As a sober specialist, he saw that Dibner's successes were undeniable and that his reactor was working. As an enthusiastic adept, he believed in the wisdom of Heisenberg. Both of these incarnations perfectly combined in him, and, obeying his two souls, he kept both groups of scientists around him, although they could not work normally, being equally deprived of raw materials. If in Gerlach's place some kind of "party genenosse" or a general, he would, without hesitation, decide something: not to ban those, but these, and there is nothing to think about. The wisdom of a scientist is not always befitting a functio

In Dibner's assessment, however, his enigmatic boss was very independent. The reactor scheme proposed by Dibner turned out to be so unusual that neither an amateur nor an opponent could appreciate it. Her correctness was revealed only to a sober specialist, standing “above the fight”. Gerlach immediately spoke to Professor Winckhaus of the Berlin Polytechnic Institute. He wanted Dibner's career to finally be crowned with academic recognition and he received an associate professorship at the institute. However, other scientists opposed this - especially people from Heisenberg's entourage. Goering's headquarters also treated the "disgraced doctor" with disdain.

In Stadtilm, Dibner continued his experiments, only now he intended to improve their scheme. Hollow uranium balls behave even better than uranium cubes. He immediately ordered such balls in order to experiment with a reactor at a low temperature. Professor Harteck advised him to put these balls in dry ice. He himself set up a similar experiment in 1940, and who knows how life would have turned out if Heisenberg, the “evil genius” of German physics, a brilliant theorist, hadn’t interfered with him.

seeking to monopolize scientific practice? Heisenberg's ideas were not always fair, but all his colleagues had to believe in these ideas, otherwise they turned into loners, outcasts, capable of amazing guesses, but powerless to influence the development of German scientific thought. Such unclaimed talents were Dibner, Baron von Ardenne, partly the same Professor Harteck. The mysterious chief Gerlach welcomed them, but even trying to help them (as in the case of the assistant professor), he was powerless to do anything.

Talking with the "uninitiated", Gerlach became even more mysterious. Sometimes, in order to achieve the desired goal, he casually hinted that "this is necessary for special explosives." The profane, far from nuclear physics, even if they were under the epaulettes of a general, fell under the spell of this phrase and agreed to help. So, in an effort to get the only high-voltage particle accelerator that survived at the Dresden factory, Gerlach, speaking at a meeting in Berlin in October 1944, emphasized that this "installation is needed for testing explosives, since no other is suitable for such purposes."

But, inclining this “special explosive” in different ways, he did not promise anything. He didn't say if it could be made. He didn’t assure, didn’t encourage, didn’t reassure - he only said that “work is underway and this and that is needed for their implementation”, but it was impossible to hear from him whether all this would “help”. However, these silences were justified by the secrecy of the project.

When it was impossible to hide behind a veil of secrecy, Gerlach knew how to use even the bare truth to his advantage, which few people succeed in. So, when Goering's personal assistant openly asked him if these uranium studies would really help us create explosives of unprecedented power, Gerlach answered with absolute confidence: "No, it's impossible." “Why bother with them then? We need to stop everything immediately! And you never thought about the future, - objected the professor. - Have you thought about what awaits us after the war? World! And in peacetime, we must also dominate. If we now suspend this most important scientific research in this most important field of science, we will be hopelessly behind our competitors. They will get ahead of us and will dominate the post-war era. Germany, even having won the war, will be on the sidelines. “It was a very nervous conversation,” Gerlach recalled. Nevertheless, in an effort not to be unfounded and to convince Nazi bosses with confessions of

success, Gerlach decided to generalize the experience of the leading groups of nuclear physicists and publish the Secret Research Projects series, including five articles by famous scientists talking about what has been achieved. He himself wrote a preface for this series, summarizing in it the results obtained in the experiments.

1. Optimal scheme: a reactor consisting of cubes. Then we use only half a ton of uranium and get a neutron multiplication factor of 2.06. If, however, the reactor is made of plates, then with their ideal thickness one and a half tons of uranium will be required, and then the neutron multiplication factor will be equal to 2.36. The optimal length of the side of the cube is not yet known to us. 2. It is possible that the neutron multiplication factor will

increase if hollow
uranium balls instead of cubes or cubes of other sizes.

3. The amount of heavy water we have is limited. To reduce the need for it, it is necessary to enrich the content of its 235th isotope in metallic uranium. The development of the ultracentrifuge has been completed and the corresponding plant is under construction.

4. Despite the extreme difficulties, we are trying to establish the production of heavy water in Germany, using the latest technology. Gerlach ended

his article by stating that experiments were now underway that might make it possible to do without heavy water - including the experiment with the fission of uranium at low temperatures (it will be carried out in the near future in Stadtilm; it is being led by Diebner and Harteck) . At the end of 1944, tests of a uranium reactor

began for the last time in a Berlin bunker near the Institute of Physics. The reactor was built by Dr. Karl Wirtz. For the first time, the unit was surrounded by a graphite reflector. (We note that back in October 1942, Heisenberg, and in January 1944, Bopp and Fischer showed that when using a graphite reflector, the neutron multiplication factor increases markedly.)

The reactor had an aluminum shell - a cylinder 216 cm high and 210.8 cm in diameter. A magnesium alloy vessel was inserted inside the cylinder, which had already been used earlier in experiments in this Berlin bunker. The space between the walls - 43 centimeters - was filled with graphite, pouring ten tons of crushed graphite plates into it. In total, the reactor contained 1.25 tons of

uranium and one and a half tons of heavy water: 1 cm thick metal plates were separated by an 18 cm thick layer of water. There were still no cadmium rods that could regulate the chain reaction if it started. However, Professor Wirtz said that things would not come to this: the reactor was conceived as a subcritical one. This time the neutron multiplication factor reached 3.37, although the same materials were used as in

the previous experiments. The indicator has improved due to the graphite reflector. If the participants in this experiment had been more attentive, they would probably have wondered why the neutron absorption rate in carbon is so bad, and then the fatal mistake of Professor Bothe would have become clear. However, they did not notice this discrepancy in the results.

The war was coming to an end, Germany was doomed to defeat, but scientists still believed in success and tried to build a critical reactor. It is possible that in Berlin there would be enough heavy water reserves for this, because the size of a "self-acting" reactor cannot be "overestimated", as Wirtz put it in early January 1945. True, on January 9, Professor Harteck came to Rjukan for the last time, trying to find at least some drops of heavy water here (the results of the trip turned out to be hopeless). In the second week of January Professor Gerlach arrived in Berlin. He

visited Wirtz's lab, peering at the feverish persistence of scientists trying to build the first zero-power heavy water reactor. For the first time in Berlin, uranium cubes were used instead of plates. The conditions under which the experiment took place were appalling. The city was bombed every night. There was no telephone connection.

The electricity went out every now and then. Gerlach returned to his place in Munich, but even there ruin reigned. Heat was not supplied to the rooms, and the flowers in his study froze. The situation at the front became catastrophic. Soviet troops were already advancing on Berlin, and it made no sense to continue scientific work in the

city, which would soon be besieged. The remnants of the institute had to be evacuated to Hechingen, even if this act looks like "defeatism". On January 27, he telephoned Berlin and said that immediately

leaves.

The first person he met was his favorite, Dibner. As soon as they started talking, they heard explosions and a roar. Window panes flew out, bombs exploded. The air sparkled and smoked. In the bunker where they went down, all preparations were already being completed. Gerlach saw in front of him the largest heavy water reactor built in Germany - B VIII. It contained hundreds of uranium cubes and another one and a half tons of heavy water. There were only a few days left before its launch. Gerlach was involuntarily silent, looking at the friendly work of mechanics, which he was about to ban. On January 29, everything was ready, and the experiment could begin. Gerlach, like Wirtz, Dibner, Heisenberg, understood: if a controlled

chain reaction really began in the reactor, this successful experiment would undoubtedly raise people's spirits. And how can one remain calm, knowing that in the moments of the most difficult trials that the country was going through, its scientists, who shared all the hardships with the people, managed to make a grandiose discovery. Will not this astonishing news unite again a nation that has suffered one defeat after another? The experiment had to be started immediately, but how could it be carried out in Berlin? In those days, any run-down German town was more suitable for conducting this scientific experiment than Berlin. The Soviet army

moved forward with terrifying speed. About two million people were evacuated from East and West Prussia. Crowds of refugees passed Berlin. Panic reigned in the city. More and more people joined those who left, those who fled, those who were in hiding, trying to find at least some safe place at a time, as in any direction they chose, all roads led to the front line, to new battles,

conflagrations. Death was approaching from everywhere. There was nowhere to run, and yet everyone wanted to run somewhere. In this doomed city, only a few scientists remained calm, sitting benevolently near the reactor they had created. But was it possible to start their experiment, because it was already unclear who was destined to sum up the results of this experiment - the person who was authorized to deal with nuclear physics by Goering, or the leader sent here by Stalin?

Diebner understood the purpose of Gerlach's arrival, and on the same day, January 29, the professor invited his confidant Rosbaud, who was always seen near him, to his place, and said that he was leaving Berlin in the next day or two and taking with him all the "heavy product" . Is that, asked Rosbaud, accustomed to learning "first hand" the latest news about the atomic project, are you taking heavy water for Heisenberg (he had long lived in southern Germany)? Gerlach did not dispute his guess. And what is she to him? What is he going to do with her? “Perhaps it is,” was the reply. January 30 at 17.30 Gerlakh ordered

everything to be packed. The next day, everything must be ready, no matter what the party orders - and the party, of course, ordered to hold on to the last ("No panic, Genosse! Nobody leaves Berlin!"). The cynical Gerlach did not even think of believing these appeals: only youngsters from the Hitler Youth and naive veterans of illusions, eternal admirers and admirers, could hold on to the last. Scientists had to rely on experience, and their instincts called to the south of Germany, to a safer place.

On the afternoon of January 31, Professor Gerlach, Dr. Dibner, dressed in military uniform, and Dr. Wirtz left Berlin by car and headed towards Kummersdorf. They were followed by several trucks carrying uranium, heavy water and equipment. Gerlach was agitated, pale, dejected. He was accompanied by a secretary, Fraulein Guderian. But the friend and confidant Rosbaud remained in Berlin. In the last conversations with him, Gerlach remained restrained and cautious and never named the purpose of his wanderings and did not open a future refuge. Therefore, reporting through the Norwegian underground to London, Professor Blackett and Dr. Cockcroft, the latest news obtained "first hand", the faithful confidant and diligent agent Rosbaud could not report the new location of the laboratory. He only knew that the entire cargo would be delivered "to

some safe place."

All night the trucks drove on the icy highway. Finally, the town of Stadtilm appeared. Professor Gerlach believed that here, in Diebner's new laboratory, the working environment would be better than in Haigerloch - especially since Wirtz also conducted his experiment according to the "Diebner" scheme. But Wirtz himself did not expect such a turn of events. Indignant at this "seizure", he began to call Hechingen, to Heisenberg. While the upset Berliner complained to his patron,

Gerlach hurried to Weimar. He persuaded Gauleiter Thuringia Sauckel to release all employees of the secret laboratory from service in the Volkssturm and labor corps, and also to ensure a normal supply of electricity. While the professor excels at weaving words, begging for benefits for his subordinates, they weave sophisticated intrigues behind his back.

That evening, Gerlach received a phone call from Heisenberg. Is it ever heard of building the first critical reactor in "that Dibner's" laboratory? How dare you hand over to him our materials seized at our Berlin institute from our employees? Our uranium, our heavy water, our equipment, our schemes, our experience, our ideas! Gerlach, sensing the difficulties of the impending dispute, invited Heisenberg to Stadtilm, where "his experience, his uranium, his ideas" were now kept. The leader of theoreticians, who conquered almost all

areas of practice, arrived at the section of the “Dahlem heritage”, accompanied by his powerful “paladin”, Professor Weizsäcker, the most intelligent scientist, who, moreover, could at any moment turn for help to his father, Ribbentrop’s assistant, that is, not the last person in the Nazi elite. With such a strong rear, it was possible to start a dispute. On the day of their arrival, February 5, the sky itself seemed to favor the aliens. The air raid alert sounded continuously. Airplanes were circling over the city, and without looking for other arguments, Heisenberg had only to point his finger at the sky, signifying the impossibility of a serious

scientific work in this mercilessly attacked town, the shy life in which should be quickly exchanged for peace, silence and peace of the southern German town chosen by him, Heisenberg. This natural argument

was, however, not enough. The negotiations lasted all the next day, and even Weiksacker was removed from the door (and Dibner was not allowed to them at all). Finally, Gerlach agreed to hand over "everything captured." However, this redistribution of

property was not enough. On February 7, Gerlach, carried away by Heisenberg, went to Stuttgart to talk with the Gauleiter of Württemberg, Murr, who liked to dress physicists in uniform and without lyrical sentiment send them to the militia. However, he avoided meeting with the physicist, who wrote a letter of protest to Martin Bormann two months ago. I had to talk to one of Murr's assistants, Waldman, to ask him for trucks to transport the "heavy product" to Haigerloch.

Then Gerlach went to Haigerloch to see the preparations being made there, and only on February 14 did he return to Stadtilm. Nine days later, a truck convoy led by Dr. Bagge moved south, carrying valuable raw materials from Dibner's laboratory.

"Risky drive, - wrote down He V diary - fighter-bombers, bomber formations. The trip is basically at night".

So, only at the end of February the equipment of the Berlin bunker finally arrived in Haigerloch. Almost a month has passed since he was taken out of Berlin. This month was wasted. Organizational issues, moving, persuasion, visits, failed meetings, promises and protests. What have you been doing with the “heavy product” all this month? Nothing.

Only now, finally, the installation of the B VIII reactor has begun anew. It, as it was decided, was equipped inside the cave. Heisenberg now had one and a half tons of uranium cubes, one and a half tons of heavy water, ten tons of graphite blocks and a certain amount of cadmium - it had to be introduced into the reactor if the reaction became uncontrollable. All other stocks of raw materials were stored in Stadtilm. Professor Gerlach himself also settled there. On February 26, at a meeting in Berlin,

Gerlach learned that "in order to save money" work on the atomic project would have to be cut in half. On the same day he sent a letter to the Research Council. He convinced that nuclear scientists were already on the verge of success, that "decisive work" was underway, and therefore asked to protect all research groups involved in this project, that is, groups created under the auspices of the Kaiser Wilhelm Society in Berlin, Heidelberg, Teylfingen and Hechingen; groups under his control and operating in Stadthilm, Haigerloch and Munich; Professor Harteck's isotope separation group; the group of professors Stetter and Kirchner, who are studying the fission of uranium under the action of fast neutrons, as well as to protect a number of industrial companies cooperating with us. Thus, the IG Farbenindustry concern and the Bamag-Meguin firm help us in the production of heavy water, and the Auer and Degussa firms in the production of metallic uranium. “All these projects should enjoy benefits for the supply of materials and electricity, as well as benefits for employees, provided for by the decree of the Fuhrer of 31. 1. 45, 23 hours,” the sober and cynical Gerlach defined his wishes.

Any list contains a circle of persons and organizations mentioned in it, and includes all those not mentioned in it. The latter, obviously, had to lose all support. Their laboratories ended up on a "starvation diet", and scientists - in the trenches near Berlin et cetera. For the last time,

Professor Gerlach defended the interests of the caste of "initiated" nuclear physicists, conjuring the ears of the military and party profane with the magic word "explosives", drawing before them the "ghost of the atomic bomb" that blessed them, confused spirit. On February 28, Gerlach

returned to Stadtilm again. Now he was concerned about the health of the scientists who had worked with Dibner. They were constantly exposed

gamma rays, neutron and x-rays. The laboratory here was hastily equipped, without taking extra precautions, and therefore the harmful background was especially high. In addition, people were constantly malnourished, and now most were suffering from bleeding. In dying Germany, the last of its physicists worked literally to the point of wear and tear.

Gerlach writes a letter to Weimar, to the local food department, demanding for his scientists “increases for harmfulness”, because in the factories the workers are entitled to such rations.

Meanwhile, everything was ready for the "cave reactor" experiment. A hole was dug in the middle of the cave. It was filled with water and placed there a huge cylinder made of light metal. The cylinder was filled with graphite blocks (all ten tons fit there), leaving a cavity in the middle (also cylindrical). There they placed the actual reactor, made of aluminum-magnesium alloy. 78 thin wires were suspended from the reactor lid, with uranium cubes strung on them (8-9 pieces each). A similar scheme was recently used by Dibner. The lid itself consisted of magnesium plates overlaid with graphite. There were fittings through which it was possible to pour heavy water and introduce a neutron source. Heisenberg and Bothe set about experimenting.

The reactor lid is tightly screwed on. The pit is filled with water, where an anti-corrosion additive is added. All seals are checked for the last time. Finally, a neutron source is introduced into the core of the reactor and heavy water is slowly pumped in. Every now and then, scientists turn off the pump and measure neutron multiplication inside and outside the cylinder. This figure is getting higher and higher. It looks like a nuclear chain reaction is about to start. The reactor power is higher than ever before in German laboratories.

Joy covers Heisenberg and anxiety - Wirtz: we have forgotten the most elementary precautions! We don't know much about the "time constant" of this reactor. We don't have the right tools to contain the unmanageable process. One hope for a cadmium block, but isn't that enough hope? And yet, most scientists, frozen in this cave, which is about to turn into the “first Chernobyl”, forget about the danger. The incredible is happening: now the world's first nuclear reactor will start operating, and it was built by German scientists in the most difficult time of the war (no one in Germany knew that the world's first reactor was created back in 1942 by Enrico Fermi).

Now all the reserves of heavy water have been poured inside. And here the intensity of neutron multiplication ceases to increase: for 100 neutrons emitted by the source, the reactor emits only 670 neutrons. Excellent result! Never before have German physicists achieved this! But the nuclear chain reaction never started. After this failure, the

theorists will start calculating again. It turns out that the size of the reactor should be increased by half. It is necessary to get heavy water again, uranium - another 750 kg each of both. Where to get it? Which Norway, which Belgium, Italy? Perhaps Dibner has something in Stadthilm? Shouldn't you contact him? How to go to him to bow? But otherwise we will achieve nothing! How far to Stadtilm? Several hundred kilometers? How long are we going to wait?! On March 22, Professor Gerlach came to Berlin to settle some official business. Here he was caught by the obviously premature news that a critical reactor had been created

in Haigerloch. Gerlach immediately called his best friend and earphone, Rosbaud. On the twenty-fourth of March, at one o'clock in the afternoon, he visited Gerlach and found him in an extremely agitated frame of mind. Gerlach immediately exclaimed: "The machine is working!" "How do you know that," Rosbaud asked in astonishment. “Just reported from Hechingen: the results of the latest measurements are in perfect agreement with the theoretical calculations!” “But this is a very big difference: it is one thing, the theory is fully proven, and another thing, it can be proved in practice. Remember,” Rosbaud continued coldly, “how much Bosch suffered before he put the Haber method into practice.” 14. However, Gerlach's confidence could not be shaken. Six months later, we

[14] Fritz Haber developed a method for producing ammonia in 1908, and it was not until 1913 that Carl Bosch created the first industrial plant for the synthesis of ammonia - approx. author.

we will learn how to carry out “chemical chain reactions,” Gerlach said at the end of March 1945. Someone noticed that a scientist is similar to an artist in that, carried away by an idea, he completely forgets about reality.

Gerlach felt at the pinnacle of success: the uranium reactor was still created! Soon there will be no need for coal, oil, or gasoline. Nuclear fuel will displace all other types of fuel. The enthusiastic cynic was not even offended by the caustic - and certainly not at all patriotic - remark thrown by his friend: "Thank God, it's too late now!" No, Rosbaud, it's

never too late to make such a discovery. A smart, responsible government, by blackmailing its enemies with our discovery, can bargain for itself quite tolerable terms of peace. We now have the most important argument for such political bargaining, and our enemies do not have this argument. They can now agree to our terms. Only one thing is bad: “Our government does not have, and indeed did not have, either intelligence or a sense of responsibility!”

His interlocutor began to debunk other components of his "diplomatic illusion." “If I were our adversary, juggling facts and hypotheses like this English spy, I would either have to kill any scientist who started this bargain with me, or I would throw all of us scientists into prison and keep them there until we started talk about everything we know about the bomb or the reactor. However, the gates of the prison could not have been opened for us - a great honor! The Russians and the Americans are probably already far ahead of us in this area.” The skeptical spy was right. But the scientists were still

interned. On March 28, Gerlach left Berlin for the last time. For the

day he stopped at Stadtilm. American troops were already near this town. All work here has stopped. Scientists indifferently waited for further events. That same night, Gerlach left the "city of the doomed." The further path took him to Hechingen and Haigerloch. He talked to Heisenberg, had coffee with Max von Laue, and visited Otto Hahn. Heisenberg, having told him about the latest experience, immediately began to give advice that promised "certain success." All the rest of the uranium and heavy water must be removed from Stadtilm. But even this is not enough: it is necessary to pick up more uranium oxide and briquettes left at the same Dibner. Whatever other theorists may say, another reactor design should be tested by placing uranium oxide inside a graphite shell. Dr. Wirtz's recent experience has shown that graphite can still be used as a moderator. Why should we trust Botha's long-standing verdict? His calculations may be wrong! (Oh, if Heisenberg had caught on sooner!)

The American troops were already seven kilometers from Stadtilm. In front of them was a nondescript town, which left the last hope for German nuclear physicists. On April 3, Gerlach arrived in Munich and started calling Diebner, but there was no connection. He tried at his own risk to go to Stadtilm, but the front line blocked the way, cutting off the last hopes. Meanwhile, the SS also remembered the

scientists abandoned by everyone in Stadtilm. On April 8, an SS detachment appeared in the town. The astonished physicists were told that they were immediately going south and would temporarily reside in one of the Alpine castles. Those who disobey will be shot immediately. Scientists did not want to experimentally verify the veracity of the command given to them and agreed with the route he proposed. In anticipation of a trip to the “keepers of state secrets,” several submachine gunners were assigned. Physicists and SS men sat in one of the classrooms (scientists, as we remember, settled in the old school building). The long night ride overcame the Nordic SS; one by one they fell asleep, leaving the clever flock to choose their own fate arbitrarily. Berkei and Dibner, having conferred in view of the sleeping guards, decided that only the most healthy would go to the Alpine castle. All others, "whatever important secrets they may keep," will remain here. Berkei chose captivity, Dibner decided to accompany the valuable scientific cargo.

After examining the documents captured in Strasbourg, American counterintelligence officers learned that uranium metal for the German nuclear project was produced by the Auer company, which was located in the town of Oranienburg. He lay in the eastern part of Germany, in the part that the Soviet military was supposed to occupy. And then in early March the Americans

decided to bomb the uranium plant. If we can't take it ourselves, let no one get it. "Solomonic decision", typical for US politicians.

In the early morning of March 15, 1945, 600 aircraft appeared in a row in the sky over a small German town. The grandiose "carpet bombing" began. One of the Soviet journalists who visited this city in the mid-1960s noted with surprise that the search for bombs that did not explode on that March day is still ongoing. The plant, which became one of the first victims of the Cold War, of course, did not go to anyone.

The Soviet military easily figured out the background of this "air operation". They carefully examined the territory of the plant, which lay in ruins, and nevertheless found here several more tons of very pure uranium oxide. Uranium was also found in Reinsberg: 5 tons of metal powder and a certain number of cubes. 25 tons of crude uranium oxide and uranates were also found. All these materials were used in the creation of the Soviet atomic bomb. Some equipment was also taken to the USSR: for example, a high-voltage linear accelerator found at the Institute of Physics in Dahlem.

Another "atomic center" of Germany - the city of Stadtilm - lay in the path of General Patton's army and therefore remained completely untouched. Soviet bombers did not come to bomb him. On April 12, 1945, the Americans entered here without a fight.

On the same day, counterintelligence officers who entered the city along with the troops reported: “After staying here for three hours, we realized that we had stumbled upon a gold mine. Diebner and all the personnel working on the project (except one), along with all materials, secret documents, etc., were taken out by the Gestapo on Sunday 8 April. Destination unknown.

However, we have: 1. Dr.

Berkei, who has been working on this project from the very beginning and everything tells. He also reported on Hechingen. 2. Volumes

of the most interesting documents. 3.

Parts of the uranium machine 15.

4. Numerous equipment, counters, etc.” Even earlier, on

March 30, the Americans captured Heidelberg. Professor Walter Bothe, Dr. Wolfgang Gentner, who worked in Paris for several years, and a brand new cyclotron fell into their hands. The city of Celle and the laboratory where the centrifuge was created were occupied by the Americans on April 17. Dr. Grot is detained.

Now the Americans knew a lot about Hechingen. They could only be annoyed that he was in the French zone of occupation. “My recent experience with Joliot convinced me that everything of interest to the Russians should not fall into the hands of the French,” recalled General Groves, head of the American atomic project. What was to be done? Some proposed to subject the "den of German nuclear scientists" to a massive bombardment; others (Colonel Pash) - drop paratroopers there and steal all the scientists and the most important documents.

However, these plans did not have to be used. On Sunday, April 22, at four o'clock in the afternoon, the French and Moroccan units entered Hechingen. Nobody resisted. The militias were disbanded two days ago when the local "Aryans and party members", not trusting the power of arms, fled.

Weizsäcker was sitting at his workplace, but his figure did not arouse the interest of anyone who entered. All documents, stocks of uranium and heavy water had already been removed from the institute and hidden near Haigerloch, where, as the Germans hoped, no one would find them. Heisenberg got on his bicycle on Friday and left somewhere. Three days later, his family, hiding in the town of Urfeld, in the mountains of Bavaria, will be surprised to see an unexpected tired man at their door. guest.

On the twenty-third of April Colonel Pesch's detachment occupied Haigerloch. The next day, the Americans broke down the door to the cave. It was damp, stuffy, dark. Officers carefully

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15 i.e. uranium reactor

shifted at the entrance to the mysterious laboratory. Everyone was afraid of the deadly radioactive rays. They brought candles. Now we could look inside.

Among the officers was Michael Perrin, who had just flown here from London. In the spring of 1942, he visited the Fermi laboratory in Chicago, saw a huge, still unfinished graphite reactor, saw how carefully the work was being done. And now in this cave he was shocked by any lack of any protection measures. Everything, obviously, was done hastily, with the only goal: to quickly create a reactor. The scientists seem to have forgotten the precaution, or been forced to forget it. Incredible carelessness! If they do get a nuclear chain reaction, they are all seriously ill, they die.

After looking around, the Americans began to dismantle the reactor. Nearby they found graphite blocks and a little bit of uranium and heavy water. All other stocks have mysteriously disappeared. The finds were loaded into military trucks and taken away. The French were several kilometers away, so that they did not find out about the "cave laboratory", it was mined and blown up. However, the French (not to mention the Moroccans) generally acted sluggishly. On the same day, four American tanks and several trucks drove into Hechingen, which had been occupied the day before. American counterintelligence agents acted as masters here. They gave the German scientists “protection certificates” forbidding searches of their laboratories. Themselves, for example, ransacked the entire house of Dr. Bagge and confiscated all documents dated 1942 and later - however, they promised to return them. He was also informed that he would be on his way the following morning. Where? You will know about it. You will be there for a few

weeks.

In front of Bagge, the long-suffering isotope lock, which survived two bombardment and three evacuations. It became the property of the Americans.

In the same room was another apparatus for separating isotopes, invented by Dr. Korshing. It was also dismantled and loaded into the car. One of the German mechanics called Korsching aside: “Let's hide some details so that the Americans will not understand anything later and will not be able to assemble the device!” The young scientist was surprised by this trick, but did so.

Over the next four days, the Americans interrogated the detained scientists. They suggested that Weizsacker and Wirtz continue their experiments under the supervision of the new authorities. Both scientists, flattered by the trust, told where uranium and heavy water could be found. On the twenty-sixth of April, a small special group (it included the British and Americans) left Haigerloch. Fifteen kilometers from the city stood an old mill. In her basement were stored barrels of gasoline. Only in the barrels was not fuel, but heavy water. Next to the mill, in the field, cubes of uranium were buried.

Meanwhile, Colonel Pash continued to comb the area. Soon he was in Teylfingen, near the old school building, which now housed the staff of the Institute of Chemistry. Two officers went inside: "Where is Otto Hahn?" They were pointed out. The old scientist was sick, he was very thin - in the last year he lost almost fifteen kilograms. “Where are the documents? Secret reports? He waved his hand indifferently: "Everyone is here." Following this, Otto Hahn, despite his objections, was taken away. Nearby in the infirmary lay his son, who had lost his arm on the Eastern Front. He was seriously ill. The scientist asked to be left with his son and wife, but he was again to become a hostage to his discovery. They took him away. Together with him, Professor Laue, who lived nearby, was brought to Hechingen. On Friday, April 27, all the detainees were taken to an unknown destination. Doctor

Bagge wrote:

> “At the beginning of the ninth, they pick me up, put me in a car. The farewell is short and cordial. At the last moment, tears suddenly begin to flow, I can hardly control myself. At the beginning of ten, a long column of cars leaves the institute in the direction of Heidelberg; here are Prof. Hahn, Prof. von Laue, Prof. von Weizsäcker, Dr. Wirtz, Dr. Korsching, and myself. Arrival in Heidelberg at 16:00; placed in a house on Philosofenweg. Magnificent view of the city and the Neckar. In the distance, near the horizon, one can see the towers of the Speyer Cathedral.

The interrogations began. Two days later, the same Bagge notes: “The main question is: where is Dibner? Nobody

knows this." With no less energy they are looking for Heisenberg, who "hid in an unknown direction." On May 1, Walter Gerlach was detained in his office (Munich, Physics Institute). On April 19, he learned that the SS had signed a warrant for his arrest. Together with his assistant, he immediately left the city and hid in the Bavarian mountains, waiting until the organization that was going to arrest him (he remembered the words of Rosbaud: “I would have ordered any scientist to be killed”) would itself be declared criminal.

Hiding in the wilderness, he still tried to phone Dibner, but all was unsuccessful. On April 22, Gerlach unexpectedly received an order to go to Innsbruck and arrange for a shelter for Diebner's laboratory and his staff. For three days he searched for Dibner. During this time, they even managed to arrest him, mistaking him for an English spy, but the dangerous misunderstanding was quickly resolved. Finally, he found Dibner in a village lying between Bad Toelz and Tegernsee. Almost all the SS men guarding the column were arrested a few days ago. On April 25, Gerlach dismissed the column. He himself returned to his Munich Institute, taking with him some of the uranium and heavy water.

On April 30, Munich was occupied by the Allied forces. The next day
the British detained Gerlach. He looked sickly, his cheeks were sunken, his face was haggard.

Dr. Dibner remained in a village thirty kilometers southeast of Munich.
He was soon arrested by the new authorities.

Colonel Pasch tracked down Heisenberg in Urfeld, where he was hiding with his family. The professor was already packing his bags to escape when the troops entered. He was taken to an armored car and seated next to two submachine gunners. The car set off, accompanied by an impressive convoy. A huge tank rode ahead, another tank and several jeeps behind. The villagers poured into the streets, looking curiously at what was happening. Someone said that, probably, Stalin is not protected anyway. Heisenberg and Diebner were

taken to Heidelberg. The Americans quickly became convinced that, unlike the other professors they had seized, Dr. Dibner turned out to be a very unpleasant person - withdrawn and grouchy. It also struck them that Dibner and Heisenberg treated each other with undisguised hostility, and other scientists did not like Dibner either. “Their conversations with him are limited to monosyllabic remarks,” one of the counterintelligence officers recorded. On May 2, British Prime Minister Winston Churchill was

informed that almost all German uranium and about one and a half tons of heavy water had fallen into the hands of the Allies. Prominent German nuclear physicists have been detained. Much of the classified documentation has been found. “It is gratifying to know that the German researchers are at least three years behind us and the Americans,” added Lord Cherville, finishing his report. Churchill himself later wrote that the Germans developed the theory three years earlier than everyone else, but then they stomped on the spot throughout the war.

How did the fate of other participants in the nuclear project. In early 1945, Dr. Paul Rosbaud, a German physicist and English spy, visited the Ardenne laboratory in Lichterfeld for the last time. To his surprise, he saw that it was better equipped than other German laboratories: a Van de Graaff generator, a cyclotron, an electromagnetic electron separator. On the same day, he reported what he saw to Gerlach: “You understand,” he got excited, “the Ardenne forgot one thing: the Russians will come and take it all for themselves.” Gerlach replied to this: “They will also take Ardenne himself with them, give him ten times more instruments than we do, and he will work quietly as before.”

Gerlach looked into the water. In the last weeks of the war, Soviet counterintelligence officers also participated in the division of the "German scientific heritage." A number of physicists working on the German atomic project moved to the USSR - Ardennes, Bevilogua, Guybe, Gustav Hertz, Depel, Pozet, Riehl, Thyssen, Vollmer, Hermann, Zilmer, Chulius - and many followed there voluntarily, signing lucrative contracts. Lavrenty Beria became their new patron.

A real find for Soviet science was the former Petersburger Nikolaus Riehl,

uranium processing and purification specialist. Subsequently, he received the Stalin Prize of the first degree, the Order of Lenin and the title of Hero of Socialist Labor for his work. He became the director of one of the closed scientific research institutes, was engaged in secret research in the field of the chemistry of radioactive fission products and studied methods of protection against radioactive contamination. In 1953 Riehl, Gustav Hertz (1951 Stalin Prize winner), Manfred von Ardenne and Professor G. Pose were transferred to Sukhumi. For two years they were no longer allowed to secret developments. In April 1955, they all returned to Germany, and all, except for Riel, chose the GDR as their place of residence. The Hero of Socialist Labor left for Munich.

However, some scientists never managed to see Germany again - we recall, for example, Professor Depel, who worked with Heisenberg for a long time. A brilliant student of Professor Harteck, Dr. Guyb, who proposed an innovative method for producing heavy water using hydrogen sulfide, also perished. Once in the USSR, he tried to escape, entered the Canadian embassy and begged to be sheltered, to give him political asylum. He was expelled from the building, offering to "come in the next day." A few days later, his wife received the scientist's personal belongings with the notification that her husband had passed away.

Dr. Albert Vogler, president of the Kaiser Wilhelm Society, only briefly survived the day of the German surrender. In recent years, he was increasingly critical of the Nazi authorities, but, as an honest campaigner, he believed that "we scientists must do everything for the victory of our fatherland, since it is waging a mortal battle with the enemy." Fegler still had a chance to live to see the day when British soldiers broke into his house and began to carry out paintings and other objects of art that he had collected all his life. The eminent scientist took poison in despair and died in a church not far from his house.

Dr. Basche, Dibner's former superior, died in the last days of the war in action under Kummersdorf. The fate of Professor Erich Schumann is unknown.

Professor Paul Harteck, the man who would certainly have built the German atomic bomb if he had been given money, uranium and heavy water, remained in Hamburg. This city lay in the British zone of occupation. Nevertheless, two American counterintelligence officers, without even bothering to obtain permission from the British authorities, arrived in Hamburg, put the scientist in their jeep and abducted him. An officer with the rank of major was driving the car. The jeep left the city and sped towards the French border.

Harteck was still in good spirits. In his jacket, hat, with a mustache cut short in a military way, he looked very imposing, resembling an officer of the occupying forces rather than a prisoner physicist.

The streets of Paris were strewn with flags. Crowds of people stood on the sidewalks. Feast reigned everywhere. A modest army jeep slowly made its way through the living alley. Harteck, always a cheerful wit, at some point felt like a participant in a grandiose parade. Glancing sideways at the major, who was gripping the steering wheel even tighter, Harteck got up from his seat and, drawing himself up like a general, put his hand to his cap.

Soon the car stopped. The professor left her. He was taken to the building where his arrested colleagues were already staying.

So was it a bomb?

In the last days of the war, the most strange and outlandish rumors were spread throughout southern Germany. “Aryans and party members” wandered around Munich, still believing in victory, and, going around apartment after apartment, they told the frightened owners that German scientists had just created an atomic bomb and now “the enemy will be defeated.” Many inhabitants, listening to the horrors of war, believed such rumors.

Even in the post-war years, no one wanted to believe that German scientists were not involved in the creation of the atomic bomb at all. For a long time it was rumored that the Germans had a secret factory on the island of Bornholm, where they made uranium bombs. Here is an entry from the diary of Professor Gerlach dated 7.08.45: “The newspaper says that we had a

16 uranium bomb factory. The major tells me that they allegedly know everything about Bornholm for sure - they developed either V-shells or radio-controlled bombs there. It appears from Bagge's diary that the interned German physicists even drew up a memorandum stating that they had never worked on a bomb. In some countries, for example, for a long time it was believed that the bombs dropped on Hiroshima and Nagasaki were removed from the secret arsenals of the Wehrmacht.

Reichsminister Speer immediately after his arrest was interrogated about the work on the atomic bomb. He showed the following: “Just like in America, our scientists have been studying the splitting of the atom for a long time. You have come a long way in America. You have huge cyclotrons. Only when I began to supervise the work, we began to build several small cyclotrons; one of them stands in Heidelberg. In my opinion, we are far behind what you have achieved in America. We have not gone further than primitive laboratory experiments, and even they hardly deserve to be talked about.

A week later he was interrogated again. Speer said practically nothing of interest to the investigators to this story - except that he mentioned Professors Both and Heisenberg, the "main characters" of the atomic project. In general, for its success, "we would need another ten years," the minister stressed. Speer was

convinced of this. He said what physicists inspired him. It is to the German scientists led by Heisenberg that the world owes the fact that the Nazis never got hold of the bomb, or rather, they did not even guess that it could be created in a relatively short time. Heisenberg brilliantly managed to convince politicians and the military of this by speaking at joint meetings. However, there were also private reasons for this. The longer they worked on the atomic project, the clearer the innumerable difficulties that stood in their way became clearer. Therefore, scientists had no reason to draw the attention of the authorities to their work, assuring them that "they are ready to create a miracle weapon for the Reich." Professor Schumann and Professor Esau even advised the scientists not to mention this bomb in any case, otherwise they would receive an order, and then, if it was not possible to create it, they would definitely not be pardoned.

Professor Heisenberg, in a letter to his old acquaintance, Professor Bethe, who left Germany in 1933 and worked in the USA on the atomic bomb, formulated the position of German physicists during the war years as follows: they had no desire to make an atomic bomb and were only glad that external circumstances saved them from having to work on the atomic bomb.

By "external circumstances" he meant, first of all, "incredible technical difficulties." However, looking at the work of German scientists from the side, one can put it differently: they never managed to move forward enough to make a decision to create an atomic bomb with confidence. Of course, if the Germans had had enough time, they would

still have created an atomic bomb. No matter how much we review the chain of events at that time, we hardly notice that any of the German scientists was tormented by moral remorse, pangs of conscience, desperate doubts that seize people who have approached the forbidden line. No, they usually did not experience such torment. The excitement of researchers drove them forward, and the sense of danger that involuntarily emanated from the authorities made them more restrained and judicious in choosing the goals of their research, not to promise the impossible, so as not to bear an "irreparable loss" later. They were experimenters, researchers, pragmatists, realists. They can not be called either the "embodiment of evil" or the "conscience of the era." They were typical "armchair scientists of the nineteenth century": they set themselves a completely achievable goal and, pursuing it, conducted an experiment. One, another, a third, have not yet succeeded. That is how they acted then. Possible targets: bomb and reactor. Due to lack of funds, it is better to limit yourself to one of these goals. Possible failure is more punishable in the first case, so all forces and means must be used to make not a bomb, but a reactor. Considerations of personal security often endanger the country.

It is quite possible that German scientists would have built a reactor after all, and then, obviously, they would have begun to create an atomic bomb. The same Heisenberg, in spite of everything, even in the last months of the war, stubbornly prepared for an experiment with a reactor. He was driven forward by the obsession of the researcher, curiosity drew him forward. These qualities could have brought success even in the early 1940s, if Professor Bothe, when conducting experiments with graphite, had not made a gross mistake. She turned out to be fatal. It forced German scientists to deviate from the main road that their American counterparts were moving, and here Speer's cautious assessment is quite understandable: "We would need another ten years."

Reflecting on the reasons for the failure of German scientists, we also note - along with the "error of Professor Bothe" and the "sabotage" resulting from the "fear of an order" - the following two subjective circumstances: the personal qualities of the people who led the atomic project in Germany, and the relationship of theorists and practitioners in the camp of German scientists. Let's talk about this in more detail.

First, let's pay attention to the fact that in the USA the atomic project was led by the highest military ranks. What happened in Germany?

Professor Esau became the first "commissioner for nuclear physics". Contemporaries spoke of him as "a good-natured man, a little fussy." The atomic project attracted him little, he was indifferent to it. He was too down to earth to believe in "the world's powerhouse in a ball of uranium." In early 1944, speaking on the radio, he said: “We technicians do not believe in miracles. We believe that success is only the result of tireless, purposeful work.” In one of the articles devoted to Ezau and published in the same 1944, the professor is described as a person “decent and modest, who knows a lot and has achieved a lot”, as a person who “has nothing to dream about”. Of course, such features are worthy of all praise, but can this characteristic - "nothing to dream about anymore" - be attributed to a scientist who heads the mysterious "atomic project"? Here, as nowhere else, enthusiastic people obsessed with the idea were required. Only dreamers and idealists could create an atomic bomb. The path to the realm of the atom was blocked for others.

Professor Gerlach, who succeeded Esau, was even less energetic than his predecessor. Gerlach himself was an authoritative figure. He maintained close relations with Vogler, Speer, as well as prominent representatives of academic science. When Goering appointed Gerlach "plenipotentiary for nuclear physics", he sought to ensure that Germany still won the "atomic race". Gerlach, a man of authority both in the world of science and in the world of politics, seemed to him quite a suitable figure. Gerlach himself was concerned about something completely different. He thought first of all about how to save the best German physicists, as well as young, talented scientists, from the slaughter into which the Nazi government plunged the country. Therefore, in his leadership of nuclear physics, he did not seek to concentrate his efforts on achieving a specific goal, be it a reactor or a bomb, but, on the contrary, openly "inflated" this program. The more scientific groups will be engaged in the same work - even interfering with each other, even taking away the most valuable raw materials from each other - the more scientists will be able to save. Gerlach, indeed, saved many lives - saved even more lives than he dared to believe, because by delaying work on the atomic project, he unwittingly saved thousands of lives in the USSR, Great Britain and other countries.

In addition, Gerlach underestimated his American and British counterparts. He believed that they were much more pragmatic than the Nazis, and therefore they were unlikely to be carried away by the "specter of the atomic bomb." No, they are too realists to spend hundreds of thousands of dollars on this work! What was his disappointment when he learned about the bomb dropped on Hiroshima. “From now on, it is impossible to assert that spiritual activity is beneficial to mankind,” he wrote the next day in his diary. – “Is it possible that any activity that helps a person, at the same time brings him death?”

So, evaluating the figures of scientists who led nuclear physics, we note that they only slowed down the work on the atomic project - and it doesn’t matter what led them, a lack of understanding of its goals or a desire to “save German science”. Party functionaries also did not understand the secrets of physics and, allocating more and more funds for "important military projects", did not realize that German scientists, simulating work on a "wonder weapon", were spending these

money primarily to satisfy their thirst for knowledge. German scientists could create an atomic bomb, because they had both the knowledge necessary for this, and all the necessary raw materials (even if there were not very many of them), but German scientists could not create an atomic bomb, because they used their knowledge primarily to to accumulate new knowledge, and because they spent all the necessary raw materials (especially since there was not very much of it) to conduct any kind of "interesting experiments", but not to create an atomic bomb. Now consider the "second

circumstance" - the enmity between theorists and practitioners in German science. “I was lucky in 1933 and 1934 to work in Rutherford’s laboratory in Cambridge,” wrote one of the main failures of the atomic project, Professor Paul Harteck, a man who suffered a lot because his more “deserved” colleagues received money and raw materials. “And when I saw how these people conducted their experiments and how they overcame the difficulties that arose during the experiment, I became convinced that Germany was inferior to them in this and that Urey discovered deuterium by no means due to a banal accident.”17 not many. Most of the German physicists were

sure that their science was “the most advanced in the world”, and their then Soviet colleagues, repeating the same phrase, could add that “our atoms are also the most fissile”. The undisputed leader among German physicists was Werner

Heisenberg, one of the founders of quantum mechanics, who received the Nobel Prize at just 31 years old. If he had stayed away from the nuclear project during the war years, the Germans might have been successful, but he actually subordinated all the work on this project to his own interests. He received almost without restriction all the necessary money and raw materials and spent them on testing his own hypotheses, depriving other scientists of the opportunity to conduct experiments that, as we can now judge, could bring success.

A significant role in this "usurpation of nuclear physics" was played by two more people who made up Heisenberg's inner circle. These are Wirtz and Weizsacker, very talented scientists who have done a lot for science, but “they were terribly far away” from practice and, specifically, from the needs of the military industry. All three were primarily interested in their own careers in science, and not "victory at any cost." All three started expensive experiments just to test their theoretical results with their results. Strictly speaking, all scientists in all countries acted and act in this way, but only in peacetime. By creating the theoretical foundations of science, you will not win the war. With his studies of the war years, Heisenberg received

only the praise of his colleagues, something ephemeral and satisfying nothing but pride. With their research during the war years, the Americans achieved a different, more tangible success: they created the atomic bomb.

The Abwehr reports only reassured the German physicists: they were sure to the end that they were far ahead of the Americans. Indeed, at the end of the 30s they were far ahead of the Americans, but just as quickly lost the advantage. Their last success was the Leipzig experiment of Heisenberg and Depel, which took place in the spring of 1942 (reactor L IV): then, for the first time in the world, neutron multiplication was recorded. After this experiment, German science actually "marked time". Although German scientists focused all their efforts on creating a nuclear reactor, they never managed to design it. Not only that: they failed to convince the authorities that such a reactor is needed by a country waging a brutal war and subordinating its entire economy and all science to military needs. Therefore, the atomic project was treated as something secondary, "exotic". It could have been closed if not for the energy, authority, connections of people like Heisenberg, Weizsäcker. He was kept, but he did not enjoy the attention and support of Nazi politicians. Is it possible to compare the friendly and purposeful work of American scientists who participated in the "Manhattan Project" with the unhurried and even lax (what is the only mistake of Professor Bothe!) The work of German scientists, work that took place in an atmosphere of eternal squabbles and quarrels,

17 Harold Urey discovered deuterium in 1932 - approx. author.

a job in which some project participants treated others with undisguised hostility, a job in which some scientists sometimes expended more energy on disrupting the experiment of their colleague than on setting up their own experience?

Finally, we also note that from the middle of 1943 it was extremely difficult to engage in scientific work in Germany. The country was under constant bombardment. A number of important experiments were thwarted because

of this. Everything is over. Only the bare facts remain. On December 2, 1942, the world's first E. Fermi reactor was launched. Four years later, on December 25, 1946, the first nuclear reactor in the USSR began to operate. In 1948, the first industrial reactor was launched in the USSR. On August 6, 1945, the Americans dropped an atomic bomb on Hiroshima. On August 29, 1949, at seven o'clock in the morning, I. V. Kurchatov signed an order to carry out the explosion of the first Soviet atomic bomb.

Secrets behind seven seals

Experiences in the camps

Dreaming of a "wonder weapon", the fascist bosses did not hesitate, so to speak, along the way, to solve even smaller problems. Along with the creation of installations that emitted the mysterious X-rays, they also designed gas chambers, solved the problem of gold mining for the Third Reich, made fuel from "nothing" ... All this was often done in the strictest secrecy. But time tore the veils of secrecy. And here's what under they were

discovered. If at the beginning of the war the soldiers of the Soviet army constantly carried gas masks with them, then by 1943 most of them had been thrown away - our troops were no longer afraid of the use of gases by the Nazis. But why? The war, after all, turned to the West, then it entered to the Third Reich, the Germans had experience in using gases since World War I, and yet such weapons were not used at the front during World War II. Why? Let's try to look at the

problem, from this point of view. They say that Nazi bosses did not risk

to use gases for the simple reason that they knew that the Soviet army also accumulated sufficient stocks of such weapons.And since the population density in Germany is much higher than in Russia, the pedantic Germans considered that their own losses would be much higher than the enemy. Here, they say, they abstained ...

But if this is true, then not all. The leaders - both Nazi and Soviet - by and large did not care at all what would happen to their peoples. They needed dominion over the world. And what will be the price of victory - is it all the same? After all, winners are not judged... No, the main reason,

obviously, lies elsewhere. The Nazis believed that the weapons that were used were enough for them to win at the front. And they found a different purpose for the chemical - they used it against people who seemed to be non-existent ... As you know, I.V. Stalin did not recognize the existence

of Soviet prisoners of war. Encircled (often through the fault of the higher command), the units were obliged to break through to their own or die. Wounded, shell-shocked, unconscious people, being taken prisoner, immediately found themselves abandoned to their fate. The leader of all peoples flatly refused to sign an international convention that guaranteed the rights of prisoners of war, gloomily saying that we do not have such. There are only deserters and traitors to the motherland. Thus, about 6 million people were, as it were, deleted from life. And although

the use of prisoners of war in the military industry or in any area related to the needs of the front is a gross violation of the Hague and Geneva Conventions, the leaders of the Third Reich formally had a free hand.

And here is the result of such a policy. When the Allied forces liberated the prisoners in the POW camps in 1945, there were only about a million of them. Where did you go

rest?

During the war, at least a million Russian prisoners of war were released from the camps or recruited to serve in units formed by the Germans from persons who collaborated with them. Two million Russian prisoners of war died in German captivity - from hard work, hunger, cold and disease. There is no data about the fate of the rest - and this is about three million more people. However, in Nuremberg, convincing facts were presented, indicating that they were most likely exterminated by the fascist service of the SD. True, according to German data, only 67 thousand people were executed, but who believed them? Let's try to conduct our own investigation ... It is known

that the bulk of Russian prisoners of war -

about 3 million 800 thousand people - were captured by the Germans at the first stage of the Russian campaign, especially when surrounded, from June 21 to December 6, 1941. It must be admitted that in the course of fighting and rapid advance, the army cannot pay due attention to such a large number of prisoners. But the Germans did not make any efforts in this regard. Indeed, German documents testify that Soviet prisoners of war were deliberately starved, left to die in the cold during the fierce, extremely snowy winter of 1941/42.

“The more prisoners of war who die, the better for us” was the attitude of many official Nazi officials, as Rosenberg testifies.

The dim-witted Minister for the Occupied Eastern Territories was no example of a humane Nazi, especially in relation to the Russians, with whom, as we know, he was brought up together. But even he protested the treatment of Russian prisoners of war in a long letter dated February 28, 1942, to General Keitel, Chief of Staff of the OKB. This was the moment when the Soviet counter-offensive pushed the Germans back from Moscow to the furthest lines that winter and when the Germans finally realized that the adventure to destroy Russia in one short campaign had failed and that now that the US had joined Russia and Britain in as an adversary of Germany, they may not win the war, in which case they will have to answer for their war crimes.

> “The fate of Russian prisoners of war in Germany,” Rosenberg wrote to Keitel, “is a tragedy of the greatest magnitude. Of the 3 million 800 thousand prisoners, only a few hundred thousand are still able to work, most of them are exhausted to the limit or died due to terrible weather.

And then Rosenberg notes that this could have been avoided - there is enough food in Russia to feed them.

> “However, in most cases, the camp authorities forbade the transfer of food to the prisoners, they were more likely to starve them to death. Even during the transitions of prisoners of war to the camp, the local population was not allowed to give them food. In many cases, when prisoners of war could not move further from hunger and exhaustion, they were shot in front of the shocked locals, and the corpses were left on the road. In many camps, prisoners were kept in the open. Neither in the rain nor in the snow they were provided with shelter ... And finally, we should mention the executions of prisoners of war. At
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> the same time, any political considerations were completely ignored. So, in many camps they shot, for example, all the "Asians" ...

Moreover, they included not only immigrants from Asia. Shortly after the start of the Russian campaign, the SS gained the right to "comb" Russian prisoners of war. The purpose of such actions was revealed in the testimony of Otto Ohlendorf, one of the most cruel executioners of the SD. Like many of Himmler's associates, he was known as an "intellectual" because he graduated from the law and economics departments of the university and was a professor at the Institute of Applied Economics.

> “All Jews and Bolshevik commissars,” Ohlendorf testified, “were to be removed from the camps and shot. As far as I know, this practice was carried out throughout the Russian campaign.

However, not everything went smoothly. Sometimes Russian prisoners were so exhausted that they could not reach the place of execution on their own, and this caused protests even from Heinrich Müller, the chief of the Gestapo.

> “The heads of the concentration camps complained that from 5 to 10 percent of Soviet citizens of Russian nationality sentenced to death arrived at the camps half dead or already dead ... It was noted that, for example, when moving from the railway station to the camp, a significant number of them fainted from exhaustion, dying or near death, and they had to be thrown into the bodies of cars following the column ... "

It was a pity to waste bullets on such people, and therefore German specialists came up with a new, cheaper way to kill people.

> “In the spring of 1942,” witness Ohlendorf told the Nuremberg trials, “an order was received from Himmler to change the method of execution, primarily of women and children. Since then, they have been taken to the moats in trucks equipped with gas chambers (gas chambers). The cars were designed specifically for this purpose by two Berlin firms. From the outside it was impossible to determine what they were intended for. They looked like ordinary vans, but they were designed in such a way that when the engine was started, exhaust gases were fed into a closed body, killing everyone who was there within ten to fifteen minutes.

But this method was not ideal either.

> “The burial of those who died in trucks with gas chambers,” Ohlendorf complained, “was the most difficult test for the personnel of the special operations units.”

This was confirmed by a certain Dr. Becker, whom Ohlendorf identified as the designer of the gas chambers. In his letter to SD headquarters, Becker objected to SD personnel unloading the corpses of gassed women and children, emphasizing that “severe psychological trauma and serious damage to health can be inflicted on all those employed in this work. They complained to me about the headache that appeared after each such unloading. Dr. Becker also drew the attention of his superiors to the fact that “the use of gas is not always

carried out correctly. In order to quickly complete the operation, the driver presses the accelerator to failure. At the same time, the persons to be killed die from suffocation, and not from gas poisoning, while falling into a dream, ”as the creators of the gas chambers planned. The designer, obviously, seemed to himself downright humanist, offering to improve the technology of killing. “My recommendations have now confirmed that with the

right adjustment of the lever, death comes faster and the prisoners fall asleep peacefully. Faces distorted with horror and excrement, as it was before, are not observed.

But in the gas chambers, as Ohlendorf showed, it was possible to simultaneously strangle from 15 to 25 people per flight, and this was completely insufficient in comparison with the scale of extermination prescribed by Hitler and Himmler. Not enough, for example, for an operation carried out in Kiev, the capital of Ukraine, for two days - September 29 and 30, 1941, when, according to the official reports of the special forces, 33,771 people, mostly Jews, were killed. Therefore, in addition to mobile gas chambers, hospitals were also equipped in the Third

Reich.

for the extermination of people - death camps.

All - more than thirty - the main Nazi concentration camps were essentially death camps, where millions of prisoners died from torture and starvation. Although the camp authorities kept their own records (each camp had its own official "totenbuch" - the book of death), the records were incomplete, and in many cases the books were destroyed when the advancing allies approached. But still, they testify to many things. So part of one of the death books that survived in Mauthausen included records of 35,318 deaths from January 1939 to April 1945.

The largest and most famous was the Auschwitz camp, whose capacity (four huge gas chambers and adjacent crematoria) far exceeded the capacity of other camps - in Treblinka, Belzec, Sobibur and Cheÿmno, located in Poland. There were other, less extensive death camps near Riga, Vilna, Minsk, Kaunas and Lvov, but they differed from the rest in that they were mainly shot, not gassed.

For some time the leaders of the SS vied for the fastest gas to exterminate the Jews. The speed of action was an important factor, especially in Auschwitz, where by the end of the war a kind of record was set - 6,000 victims per day. The head of the camp for some time was Rudolf Hess, a former criminal who had been convicted of murder in his time. At Nuremberg, he testified under oath that the gas he used was the most effective:

> The "final solution" of the Jewish question meant the wholesale extermination of Jews in Europe. In June 1941, I received an order to install equipment in Auschwitz to exterminate them. By this time, three extermination camps were already operating in the Polish General Government: Belzec, Treblinka and Wolzek ...
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> I arrived at Treblinka to study on the spot how the extermination of prisoners was carried out. The head of the camp told me that in six months he had liquidated 80,000 people. His main duty was the liquidation of all Jews from the Warsaw Ghetto. He used carbon monoxide,
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> and his method seemed to me ineffective. So when I fitted out the extermination building at Auschwitz, I adapted it to use cyclone B gas, which was crystalline hydrocyanic acid. We dumped it into the gas chamber through a small hole. To suffocate everyone in the cell, it took from three to fifteen minutes, depending on climatic conditions. We determined that people were dead by the screams that stopped. Then we waited about half an hour before opening the
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> cell doors and unloading the corpses. Then the soldiers of the special actions detachment removed rings and other jewelry, pulled out golden crowns from the mouths of the dead. Another improvement we made was the construction of gas chambers with a one-time throughput of 2,000
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> people, while in the ten gas chambers of Treblinka, 200 people each could be exterminated at a time.

Hess then explained how the selection of victims destined for the gas chambers was made, since not all incoming prisoners were killed immediately. This was explained by the fact that some of them were required to work at the chemical plants "I. G. Farbenindustri" and at Krupna enterprises. There they worked until exhaustion, and then were subject to the "final decision".

Herr Hess tirelessly made improvements in the art of mass murder.

> “And another improvement that gave us an advantage over Treblinka was that the victims of Treblinka almost always knew that death awaited them, while at Auschwitz we tried to fool them into thinking that they would be disinfected, they would go through “ flasks,” he explained. - Of course, they often recognized our true intentions, and then flashed

riots, there were complications. Often women hid their children under their clothes. And when we found them, we immediately sent them to the gas chambers.

We were required to carry out extermination operations in secret, but the disgusting sickening stench from constantly burning bodies permeated the entire area, and the inhabitants of the surrounding villages, of course, knew that mass extermination of people was being carried out in Auschwitz.

Hess explained that sometimes a few prisoners were selected - apparently from among the Russian prisoners of war - and killed by injections of gasoline. “Our doctors,” he adds, “were under orders to issue the usual death certificates and list any cause of death on them.” To Hess' frank

descriptions, one can add a laconic and at the same time comprehensive picture of the extermination of people and the liquidation of corpses in Auschwitz, drawn in the testimony of the surviving prisoners and the jailers themselves ... Selection that determined which Jews were sent to work, and which were sent directly to the gas chambers , took place at the railway station, immediately after the prisoners were unloaded from the cars in which they were locked up, without water and food, often for a whole week, since many were delivered from such remote places as France, Holland, Greece. Although on arrival there were heartbreaking scenes of the violent separation of wives and husbands, children and parents, none of the prisoners, as Hess testified and the survivors confirmed, had no idea what lay ahead. After all, some of them were given beautiful postcards with views of Waldze, which they had only to sign and send home to their relatives. The pre-printed text on the postcard read: “We're well settled here, we've got a job, and we're being treated well. Looking forward to your arrival." The gas chambers themselves and the adjoining crematoria, when

looked at closely, did not at all make an ominous impression. It was impossible to determine what the purpose of these buildings really was. Around them were well-manicured lawns and flower beds. The inscriptions at the entrance read: "Bani". Unsuspecting Jews believed that they were simply taken to the bathhouse to get rid of lice - a common occurrence in all camps. And all this was accompanied by pleasant music!

The orchestra of young pretty girls dressed in white blouses and dark blue skirts, as one of the survivors recalled, was recruited from prisoners. While the selection of candidates for the gas chambers was going on, this one-of-a-kind musical ensemble played bravura melodies from The Merry Widow and The Tales of Hoffmann. Nothing solemn and gloomy from Beethoven. The funeral march at Auschwitz was played by cheerful, cheerful melodies from Viennese and Parisian operettas. To this

music, remembering happy and more carefree times, men, women and children went to the bath buildings, where they were asked to undress before taking a “shower”. Sometimes they even provided towels. Once in the “shower room”, they, perhaps for the first time, began to suspect that something was wrong here. The room was filled with people like barrels of herring, which did not allow to take a shower, while the massive door was covered, locked and sealed. At the top, where mushroom-shaped cones were located above the ventilation pipes that communicated with the gas chambers, guards stood ready at any moment to pour hydrogen cyanide into them, or Cyclone B in the form of blue-violet crystals. Initially, this substance was produced as a strong disinfectant. As we have seen, Herr Hess found a new use for it, which he was very proud of. Prisoners from neighboring blocks watched the action, as Sergeant Moll signaled to the

guards to pour the crystals into the ventilation pipes. "Wonderful! he exclaimed. “Now give them something to chew on.” And he laughed out loud. The crystals at that moment fell into the holes, which were then tightly closed.

Everything that happened inside, the executioners could observe through viewing slots covered with thick glasses. The naked prisoners, meanwhile, looked up for a shower that wasn't there, or at their feet, wondering at the lack of drainage holes. Before

before the gas began to act actively, some time passed. And then they realized that gas was coming through the holes in the ventilation pipes. It was at this point that panic usually set in. Crushing each other, people sought to get away from the corpses, huddled against a huge metal door, and then, according to Reitlinger, “suddenly began to climb on top of each other, creating something like a bluish, sticky, blood-splattered pyramid, torturing and crippling each other, even losing consciousness."

After twenty or thirty minutes, when the huge mass of naked bodies ceased to writhe, the pumps came into action, pumping out the poisoned air, the large door opened, and the employees of the Sonderkommando got down to business. They were Jews from among the prisoners, who were promised life and sufficient food for doing the most terrible work imaginable. Putting on gas masks and rubber boots, taking the hoses, they set to work. Reitlinger described it this way:

> “Their first task was to wash away the blood and feces before they began to pull apart the entangled bodies with hooks and hooks. This procedure was a prelude to a hideous hunt for gold, to the removal of teeth and hair, which the Germans considered strategic materials. Then it was time to travel in a lift or trolleys to the crematorium ovens, then to the mills, which grind the clinker into fine ash, after which it was loaded into trucks and dumped into the river.

Testimony at the Nuremberg trials noted that the ashes were sometimes sold as fertilizer. A Danzig firm, according to documents presented by the Soviet prosecution, manufactured an electrically heated boiler for the production of soap from human fat. His recipe included "12 pounds of human fat, 10 quarts of water, and 8 ounces to a pound of caustic soda... All boiled for 2-3

hours and then cooled down.

According to documents, there was an active struggle between German entrepreneurs for contracts for the construction of facilities for extermination and cremation, as well as for the supply of deadly blue-violet crystals. The Topf & Sons firm from Erfurt, which specialized in the supply of

heating equipment, won a contract for the construction of crematoria in Auschwitz. Extensive correspondence regarding this deal was found among the papers of the camp authorities. The firm's letter dated February 12, 1943 is reliable evidence of this.

> “To the Central Construction Directorate of the
> SS and Police Service of Auschwitz
> Contents: On
> the construction of crematoria 2 and 3 for the camp.
> We are acknowledging receipt of your order for five triple ovens, including two electric cadaver lifts and one spare lift. The order also includes a coal loading plant and a transport device.
>
> ashes."

However, Topf & Sons was not the only firm involved in this sordid affair. For example, the firm S. N. Kori also bid to build furnaces in Belgrade, touting her extensive experience in this area, as she had already built four furnaces for Dachau and five for Lublin, which, she stressed, "totally satisfied" the customer. Cyclone B crystals, which killed prisoners, were primarily supplied by two German companies that received a patent for their production from the I. G. Farben industry.

These were the Tesch and Stabenov firms in Hamburg and Degesch in Dessau. The first supplied 2 tons of crystalline hydrogen cyanide per month, the second - 0.75 tons. Delivery orders suddenly surfaced in Nuremberg. The directors of both firms claimed that they sold their products only for the purpose of

disinfection and did not even imagine that it could be used to kill. But this trick didn't work. Letters were found sent by the Tesch & Shtabenov firm with a proposal to supply not only the crystals mentioned, but also ventilation and heating equipment for the gas chambers. In addition, the incomparable Hess, when he began to testify, outdid himself by confessing that the directors of the company could not have been unaware of how their products were used, since they supplied (according to Hess) so much that would be enough to exterminate 2 million people. After the war, before the start of the trials in Germany, almost everyone in the West believed that the massacres were the work of, in general, a few fanatical SS leaders.

But the minutes of court hearings leave no shadow of doubt about the complicity in them of a number of German industrialists, and not only Krupp and the directors of the chemical trust "I. G. Farben industry, but also smaller entrepreneurs who, outwardly, probably seemed to be unremarkable fathers of families and respectable servants of society.

How many unfortunate, innocent people, mostly Jews, as well as Russian prisoners of war, were destroyed in Auschwitz alone! The total number cannot be determined. Hess himself, in his testimony, called a figure of the order of "2 million 500 thousand shot, suffocated with gas and burned, and at least 0.5 million died from starvation and disease, which in total is about 3 million people." Later, during his trial in Warsaw, he reduced this figure to 1 million 135 thousand people. The Soviet government, which conducted a thorough investigation of the atrocities at Auschwitz after the Red Army captured it in January 1945, cited an even higher figure in Nuremberg - 4 million people. And all of the above is, perhaps, still flowers in comparison with the experiments of Dr. Rascher and his ilk. This fact sits in the memory of many like an iron nail: General D. M. Karbyshev was

doused with ice water and frozen alive in the Mauthausen camp in the winter of 1945.

For a long time, I, like you, thought that the Nazi monsters thus took revenge on the recalcitrant general for his unwillingness to cooperate, for the fact that even in the conditions of a concentration camp he tried to conduct anti-fascist work.

All this, of course, is true. But, in addition, this story, like many others, turned out to be
if I may say so, and a scientific lining.

About ten years ago, finally, my, now deceased, father-in-law (the kingdom of heaven to him, he was a good man) finally opened up. It used to happen that no matter how much both children and grandchildren asked him, he didn't even say a word, for which he was given numerous government awards, and then suddenly, consider half a century later, he began to tell ...

He was captured because of the "Katyusha". If anyone does not know, the Nazis staged a real hunt for our Guards mortars. Therefore, the tactics of their use at the beginning of the war was such. The Katyusha battery, based on the chassis of the ZIS-5 car, drove to a given point, fired a volley at a predetermined target, and then quickly rolled out of the firing position. For the Nazis immediately opened furious return fire, sent special squadrons of bombers, groups of saboteurs to cover the battery, take at least one car to their location for subsequent thorough study of the installation. Ours were also well aware of this, because every battery member knew: in the event

why the car should be blown up, not left to the enemy even at the cost of his own life.

However, instructions are written, but not always executed. Especially in combat conditions. In general,

when they once again got into a bind, my father-in-law came to his senses after a strong kick in the ribs: - Schnell, Russian Schwein! -

the red-haired German swore with a machine gun at the ready. And he gestured expressively with the barrel: they say, you either get up quickly and stomp where I order, or you will remain lying here forever ...

What to do? Father-in-law got up and walked, swaying from dizziness and nausea -
apparently exploded somewhere very close and he was pretty shell-shocked.

Fortunately for him, the German, apparently, did not figure out that the Russian soldier captured by him had

something to do with Katyushas. Comrades in arms, obviously, managed to give a strekach. However, it is possible that a huge fresh funnel, which they passed by, is all that remains of both the car and its crew ...

In general, one way or another, my father-in-law ended up in a concentration camp. First, temporary, field, and then stationary - with barracks lined up in order of ranking, neatly sprinkled paths and even medical personnel in white coats.

The father-in-law was delighted - his head was still cracking after the shell shock - and the neighbors in the barracks quickly

cooled him down: - Look, there is only one

treatment - chik, and you're done! .. And they said that the doctors here are extremely strange - they don't treat, but cripple. And in a variety of ways. Some new ones are added to the existing wounds and they watch how they rot. Others are forced to drink salt water and kept in cold water baths for days. From the third, they take

blood in liters ... The father-in-law realized that if he didn't immediately give a tear, then he would die here. He was a healthy guy, a Donbass miner, after all. He persuaded another prisoner of war stronger to become partners, and they rushed as fast as they could to the

East at the first opportunity. Father-in-law did not provide details. He only said that fools sometimes get lucky; they fled in broad daylight, huddled under a freight car that had just been unloaded. And when they were missed, they were already far away ...

They were lucky again - when crossing the front line. Neither the Fritz noticed them, nor did they hit their own when they fell right on their heads into the front line trench. And the special officer they got was not a bastard. And since they lied with their partner smoothly, in one voice - as they agreed in advance - and about captivity, no, no, they were soon left alone. They took a rifle in their hands and began to retreat along with the rest ...

And back, to the West, they stomped only after more than a year. However, his father-in-law never reached Germany - at the end of the war, he was returned to Donbass as a top-notch specialist in mine equipment. It was necessary to urgently restore the mines blown up in 1941.

And only relatively recently I learned that my father-in-law became one of the forced participants in the experiment, which was carried out in the Third Reich by about 200 local medical luminaries. Moreover, Nazi doctors performed experiments not only on Russian prisoners of war, on prisoners of concentration camps, on men and women of non-Aryan

nationality, but even over the Germans.

The "experiments" were very diverse. The subjects were placed in pressure chambers and altitude regimes were checked on them until their breathing stopped. They were injected with lethal doses of typhoid and hepatitis germs. They were subjected to "freezing" experiments in ice-cold water or taken naked into the cold until they froze (remember Karbyshev). They tested the effect of poisoned bullets, as well as mustard gas.

In a women's concentration camp, for example, hundreds of Polish girls - "guinea pigs", as they were called - were deliberately wounded and driven to gangrene, while others were "experimented" in bone transplantation. In Dachau and Buchenwald, gypsies were selected and tested for how long and in what way a person could live if he only drank sea water.

In many camps, experiments were widely conducted on the sterilization of men and women, because, as the SS therapist Dr. Adolf Pokorny wrote to Himmler, "the enemy must not only be defeated, but also eradicated." In those cases where it does not need to be killed - and the need for labor, as we already had the opportunity to see, by the end of the war called into question the expediency of exterminating people - it should be "deprived of the opportunity to reproduce itself." As Dr. Pokorny informed Himmler, he succeeded in finding suitable means for this purpose - the plant Caladium seguinum, which, according to him, provided long-term sterility. "The mere idea," the good doctor wrote to the Fuhrer of the SS, "that the three million Bolsheviks now in German captivity can be sterilized and at the same time be fit for work opens up far-reaching prospects."

Another German doctor who discovered "far-reaching prospects" was

Prof. August Hirt, Head of the Institute of Anatomy at the University of Strasbourg. His area of interest was somewhat different from the subjects of study of his colleagues, as he told Himmler's adjutant, Lieutenant General of the SS troops Rudolf Brandt, in a letter written on Christmas Eve 1941:

> “We have at our disposal a large collection of skulls of almost all races and peoples. However, we have only a very small number of skulls of the Jewish race ... The war in the East presents us with an opportunity to fill this gap. With the receipt of the skulls of the Jewish-Bolshevik commissars, which are the prototype of the most repulsive, but characteristic humanoid creatures, we will be able to acquire the necessary scientific material.

Professor Hirt did not mean the skulls of the "Jewish-Bolshevik commissars", so to speak, already dissected. He suggested first measuring the skulls of the living. Then, after the Jew has been killed - the head must not be injured - the doctor will separate it from the body and place it in a hermetically sealed container. After that, Dr. Hirt will

begin further scientific research. Himmler was very pleased. He instructed to provide Professor Hirt with everything necessary for research work. And he was provided. The responsible supplier of the "scientific

material" was a rather remarkable Nazi named Wolfram Sievers, who repeatedly appeared as a witness at the main Nuremberg trial, and then as an accused at the Doctors' Trial. The former bookseller Sievers had risen to the rank of Colonel in the SS Troops and Executive Secretary at the Institute for Hereditary Research, one of the ridiculous "cultural" institutions Himmler set up to research his many crazy ideas. According to Sievers, there were 50 scientific institutions there, one of which was called the Institute for Military Scientific Research, and it was headed by the same Sievers. He was a man somewhat similar to Mephistopheles, with a cunning squint of his eyes and a thick blue-black beard. In Nuremberg, he was dubbed the Nazi Bluebeard after his resemblance to the famous character. Like many other participants in this story, he kept a detailed diary, which, like his correspondence, survived and helped him end his life.

on the gallows.

By June 1943, Sievers had succeeded in selecting men and women in Auschwitz whose skeletons were to serve later "for scientific measurements" conducted by Dr. Hirt, a professor at the University of Strasbourg. “In total,” Sievers reported, “115 people were processed, including 79 Jews, 30 Jewish women, 4 Asians and 2 Poles.” At the same time, he submitted an application to the SS headquarters in Berlin for the transportation of those selected "for processing" from Auschwitz to the Natzweiler concentration camp, near Strasbourg. During cross-examination at Nuremberg, the English prosecutor asked what the word "processing" meant. “Anthropological

measurements,” Sievers replied. - That is, before they

were killed, an anthropological measurement was carried out? And that's all for what they needed, right? “Then

casts were made,” Sievers added. He was

sentenced to death and hanged, although investigators may never learned the terrible truth.

The captain of the SS troops Josef Kramer, a killer with extensive experience gained in Auschwitz, Mauthausen, Dachau and other concentration camps, told about what happened next. Having earned the short-lived fame of the Belsen Beast, he was subsequently sentenced to death by an English court in Lüneburg.

> “Professor Hirt of the Strasbourg Institute of Anatomy informed me of a convoy of prisoners leaving Auschwitz,” he told the investigator. - The doctor said that they would be killed in the gas chambers of the Natzweiler concentration camp.

> After that, the bodies will be delivered to the Institute of Anatomy at his disposal. He handed me a half-litre bottle about half full of some kind of crystals (I think they were cyanide salts) and explained the approximate dosage to be used to poison those arriving from Auschwitz.
>
> At the beginning of August 1943, I received 80 prisoners who were to be put to death with crystals given to me by Hirt. One night, in a small car, I drove about 15 people to the gas chamber - the first batch. I told the women that they needed to enter the cell in order to be disinfected. Of course, I didn't say that they would be gassed there."

By this time, the Nazis had already perfected the technology of gassing.

> "With the help of a few SS soldiers," Kramer continued, "I forced the women to strip naked and in this form pushed them into the gas chamber. When
> the door slammed shut, they started screaming. Through a small pipe ... I poured the required amount of crystals into the chamber and began to observe through the viewing hole what was happening in the chamber. The women breathed for about half a minute more, then fell to the floor. Then, turning off the ventilation, I opened the door and saw lifeless bodies, stained with excrement.

Captain Kramer testified that he repeated this procedure several times until all 80 prisoners were euthanized. After that, the corpses were handed over to Professor Hirt, as required. The interrogators asked Kramer how he felt at that time. Kramer gave an answer that is impossible to forget and which sheds light on a phenomenon characteristic of the Third Reich, but seemed incomprehensible to a normal person:

> "I did not have any feelings during the execution of these actions, since I received an order to liquidate 80 prisoners in the manner I have just described. This is how, by the way, I was trained to act ... "

Another witness, Henri Eripier, a Frenchman who worked as an assistant at the Institute of Anatomy, in the laboratory of Professor Hirt, until the Allied troops entered Strasbourg, described what happened next:

> "The first shipment we received included the corpses of 30 women… The bodies were still warm. The eyes were open and shining. Red, bloodshot, they crawled out of their sockets. Traces of blood were visible near the nose and around the mouth. But there were no signs of rigor mortis…"

Eripier suspected that they were deliberately killed, and secretly wrote down their personal numbers, tattooed on his left arm. Then two more batches arrived with a total of 56 corpses in exactly the same condition. They were alcoholized under the direct supervision of Dr. Hirt. However, the professor showed signs of unease in connection with the whole affair.

> "Henri," he said to Eripier, "if you can't keep your mouth shut, you will become one of them…"

According to correspondence, the professor separated the heads and, according to him, collected a collection of skulls that had never existed before. But soon certain difficulties arose, about which the head of the Institute for Research on Heredity reported to Himmler on September 5, 1944:

> "In view of the wide scale of scientific research, the processing of corpses has not yet been completed," he wrote. – To process another 80 corpses, you will need a certain time".

And time was running out. The advancing American and French troops were approaching Strasbourg. Hirt requested "instructions as to the fate of the collection".

> “Soft tissues could be separated from corpses in order to exclude their identification,” he reported. “However, this means that at least part of the work was done in vain and that this unique collection is lost to science, since it will not be possible to make plaster casts later.
>
> As such, the collection of skeletons won't draw attention to itself. It can be declared that the soft tissues were abandoned by the French before the anatomy institute passed into our hands, and that they will be burned. Give me, please, recommendations on which of the three options should be resorted to: 1) Save the entire collection in its entirety. 2) Partially dismantle it. 3) Completely dismantle the collection.
>
> “Witness, tell me, why did you want to separate the soft tissues? asked the English prosecutor in the silent courtroom of Nuremberg. “Why did you suggest that the blame fall on the French?” “As a non-specialist, I
>
> could not have an opinion on this matter,” replied the Nazi Bluebeard, “I only conveyed the request of Dr. Hirt. I had nothing to do with killing these people. I acted as a postman ... "

Later, Eripier described an attempt, though not entirely successful, to hide the traces crimes:

> “In September 1944, when the Allies began to advance on Belfort, Hirt ordered Bong and Herr Meyer to dismember the corpses and burn them in the crematorium ... I asked Herr Meyer the next day if he dismembered all the bodies, but Herr Bong replied:“ We could not to dismember all the bodies, it's too much work. We left several corpses in the vault."

When, a month later, units led by the French 2nd Armored Division, operating as part of the American 7th Army, entered Strasbourg, these corpses were found there by the Allies.

Not only skulls, but also human skin, were used by the apologists of the “new order”. From it, as it turned out, they made excellent lampshades, and several pieces were made especially for Frau Ilse Koch, the wife of the commandant of the concentration camp in Buchenwald, nicknamed by the prisoners the Buchenwald Bitch. Tattooed skin was in special demand. About this, at the Nuremberg Trials, German camp prisoner Andreas Pfaffenberger gave the following testimony under oath:

> “... All prisoners who had a tattoo were ordered to come to the dispensary ... After examining the prisoners with the most artistic tattoos, they were killed by injection. Their corpses were delivered to the pathological department, where patches of tattooed skin were separated from the body, which was then subjected to appropriate processing. The finished product was handed over to Koch's wife, at whose direction lampshades and other decorative items of household utensils were cut out of the leather.

In another camp, in Dachau, the demand for such leather often exceeded the supply. Camp the prisoner, the Czech physician Dr. Frank Blaha, testified in Nuremberg as follows:

> “Sometimes there were not enough bodies with good skin, and then Dr. Rascher said:“ It's okay, you will get the bodies. The next day we received twenty or thirty bodies of young people. They were killed by a shot in the head or a blow to the head, but the skin remained intact ... The skin had to come from healthy people and not be defective.

However, Dr. Sigmund Rascher, perhaps, surpassed everyone in his inhuman experiments. Back in the spring of 1941, Dr. Sigmund Rascher, who was then attending special medical courses in Munich organized by the Luftwaffe, suddenly had a brilliant idea. He immediately wrote about her to Himmler. Dr. Rascher found that experiments on

the effects of high altitudes on pilots were stuck at a dead point. “Until now, it has not been possible to conduct experiments on humans, because they are dangerous for the health of the subjects, and there are no volunteers willing to undergo them,” the “researcher” wrote. “Could you provide two or three professional criminals… to participate in these experiments. Experiments, during which they are likely to die, will be carried out with my participation. A week later, the SS Fuhrer replied that "the prisoners, of course, will be willingly provided for high-altitude experiments." They were

provided, and Rusher got down to business. The results can be judged from his own reports and from the reports of other "experimenters". These documents appeared at the Nuremberg and subsequent trials, in particular, over SS doctors.

To conduct high-altitude experiments, he organized the transfer of the Air Force pressure chamber from Munich directly to a concentration camp near Dachau, where there was no shortage of human material intended for the role of guinea pigs. Air was evacuated from the newly invented ingenious device in such a way that the conditions of lack of oxygen and low pressure, characteristic of high altitudes, were simulated. After that, Dr. Rascher began to observe:

> “The third experiment was carried out in the absence of oxygen, corresponding to an altitude of 29,400 feet (8820 meters). The subject was a 37-year-old Jew in good physical condition. Breathing continued for 30 minutes. Four minutes after the start, the subject began to sweat and turn his head.
>
> Spasms appeared five minutes later; between the sixth and tenth minutes the respiratory rate increased, the subject began to lose consciousness. From the eleventh to the thirtieth minute, breathing slowed down to three breaths per minute and completely stopped by the end of the test period ... Half an hour after the cessation of breathing, an autopsy began.

Austrian prisoner Anton Pacholeg, who worked in Dr. Rascher's department, described the "experiments" in less scientific terms:

> “I personally saw through the viewing window of the pressure chamber how the prisoners endured the vacuum until the lungs ruptured. They went crazy, tearing their hair out, trying to relieve the pressure. They scratched their head and face with their nails and tried to mutilate themselves in a fit of madness, banging their heads against walls and screaming to relieve the pressure on their eardrums. Such experiments ended, as a rule, with the death of the subjects.

About 200 prisoners were subjected to these experiments before Ruscher completed them. Of this number, as it became known at the Doctors' Trial, about 80 died on the spot, the rest were liquidated a little later, so that no one could tell about what was happening.

This "research" program ended in May 1942, when Field Marshal Erhard Milch of the Luftwaffe conveyed to Himmler Göring's gratitude for Dr. Rascher's pioneering "experiments".

Some time later, on October 10, 1942, Lieutenant General Hippke, inspector of aviation medicine, expressed to Himmler, on behalf of German aviation medicine and science, his deepest gratitude for the "experiments" at Dachau. However, in his opinion, they had one omission. They did not take into account the extremely low temperatures in which the pilot operates at high altitudes. In order to correct this shortcoming, the

Air Force began the construction of a pressure chamber,

equipped with a cooling system capable of recreating cold at altitudes up to 30 thousand meters. Hippke added in his report to Himmler that experiments at low temperatures under various programs were still being carried out at Dachau.

They really continued. The "freezing

experiments" conducted by Dr. Ruscher were of two kinds: the first was to find out how cold and how long a person could endure before dying; the second is to find the best ways to warm a still living person after being exposed to extremely low temperatures.

Two methods were used to freeze people: either the person was placed in a tank of ice water, or they were left naked in the snow overnight in winter. Rascher sent numerous reports to Himmler about his "experiments in freezing and thawing." One or two examples will give a complete picture of them. One of the very first was a report submitted on September 10, 1942:

> “The test subjects were immersed in water in full flight gear ... with a hood. Life jackets kept them on the surface. The experiments were carried out at water temperatures from 36.5 to 53.5 degrees Fahrenheit (2.5 to 12 degrees Celsius). In the first series of tests, the back of the cheeks and the base of the skull were under water. In the second, the back of the neck and the cerebellum were immersed. Using an electric thermometer, the temperature in the stomach and rectum was measured, respectively 79.5 degrees Fahrenheit (27.5 degrees Celsius) and 79.7 degrees Fahrenheit (27.6 degrees Celsius). Death occurred only if the medulla oblongata and cerebellum were immersed in water.
>
> During the autopsy after death under these conditions, it was found that a large mass of blood, up to half a liter, accumulated in the cranial cavity. In the heart, the maximum expansion of the right ventricle was regularly detected. Subjects in such experiments inevitably died, despite all efforts to save, if the body temperature dropped to 82.5 degrees Fahrenheit (28 degrees Celsius). The autopsy data clearly demonstrate the importance of head heating and the need to protect the neck, which should be taken into account in the development of sponge protective suits, which is currently underway.

The table that Ruscher included with his report is based on six "fatal cases" and shows the temperature of the water, the temperature of the body when removed from the water, the body temperature at the time of death, the length of time in the water and the time elapsed before death. The strongest person was able to stay in ice water for 100 minutes, the weakest - for 53. Walter Neff, a camp prisoner who served as an

orderly under Dr. Rascher, testified at the Doctors' Trial in which he unprofessionally described one of the experiments on hypothermia of a person in ice water:

> “It was the worst experiment ever done. Two Russian officers were brought from the prison barracks. Rascher ordered them to be stripped and put into a vat of ice water. Although the subjects usually lost consciousness after sixty minutes, both Russians were fully conscious even after two and a half hours. All requests to Rusher to put them to sleep were in vain. At about the end of the third hour, one of the Russians said to another: "Comrade, tell the officer to shoot us." Another replied that he expected no mercy "from this fascist dog". Both shook hands with the words “Farewell, comrade” ... These words were translated to Rascher by a young Pole, although in a slightly different form. Rusher went into his office. The young Pole wanted to immediately put two martyrs to sleep with chloroform, but Rascher soon returned and, drawing a pistol, threatened us ... The experiment lasted at least five hours before the onset of
>
> death".

The nominal leader of the first experiments in ice water was a certain doctor

Holzlechner, professor of medicine at the University of Kiel. He was assisted by a certain Dr. Fincke. After working with Rusher for a couple of months, they came to the conclusion that the possibilities of experimentation had been exhausted. After that, three doctors wrote a top secret 32-page report called "Experiments in Freezing Man" and sent it to Air Force Headquarters. On their own initiative, on October 26 and 27, 1942, a conference of German scientists was convened in Nuremberg to discuss the results of their research. The medical aspects of emergencies on the high seas and in winter conditions were discussed. From the testimonies presented at the Doctors' Trial, it follows that 95 German scientists attended the conference, including the most famous physicians. And although there was no doubt that the three doctors deliberately brought to death a large number of people during the experiments, they were not asked a single question about this and, accordingly, not a single protest was made.

After that, Professor Holzlechner and Dr. Fincke withdrew from these experiments, but Rascher stubbornly continued them alone from October 1942 until May of the following year. Among other things, he wanted to conduct experiments, which he called "dry freezing." Himmler
he wrote:

> “Auschwitz is more suitable for conducting such tests than Dachau, since the climate in Auschwitz is somewhat colder, and also because experiments in this camp will attract less attention due to its larger area (the subjects scream loudly when frozen).”

For some reason, it was not possible to transfer the experiments to Auschwitz, so Dr. Rascher continued his research at Dachau, relying on real winter weather.

> “Thank God, we have again experienced severe cold in Dachau,” he wrote to Himmler in the early spring of 1943. “Some subjects were outdoors for 14 hours at an outside temperature of 21 degrees Fahrenheit (-6.1 Celsius), while the body temperature dropped to 77 degrees Fahrenheit (-25 Celsius) and frostbite of the limbs was observed ... ”

At the Doctors' Trial, the witness Neff also gave an unprofessional description of the "dry freezing experiments" conducted by his boss:

> “One evening, a completely undressed prisoner was taken out of the barracks and put on a stretcher. He was covered with a sheet, and every hour a bucket of cold water was poured over him. This went on until the morning. The temperature was measured regularly.
>
> Later, Dr. Rascher stated that it was a mistake to cover the subject with a sheet and then pour water on him ... In the future, persons undergoing experiments should not be covered. The next experiment was carried out on ten prisoners, who were taken outside in turn, also naked.

As people froze, Ruscher or his assistant recorded temperature, heart rate, breathing, etc. The silence of the night was often broken by the heartbreaking cries of the martyrs.

> “Initially,” Neff explained to the court, “Rascher forbade testing under anesthesia. But the subjects raised such a cry that he could no longer continue the experiments without anesthesia ... "

The test subjects were left to die, in Himmler's words, "just as they deserved it", in vats of ice-cold water or on the frozen ground, naked outside the barracks. Those who survived were quickly destroyed. But the

valiant German pilots and sailors, for whose benefit the “experiments” were carried out, had to be saved after they made an emergency landing in

icy waters of the Arctic Ocean or landed in the frost-bound expanses of Polar Norway, Finland or Northern Russia. And Dr. Rascher began in Dachau "warming experiments" on people who became guinea pigs. He wished to know what was the best method of warming a frozen person and what were the

opportunity to save his life.

Heinrich Himmler immediately gave the corps recommendations of "practical solutions" to the scientists who worked tirelessly under him. He suggested that Rascher try the "animal heat" method of warming, but the doctor at first did not attach much importance to this idea. “Warming with animal warmth, whether it be the body of an animal or a woman, is too slow a process,” he wrote to the SS chief. However, Himmler continued to urge him persistently:

> “I am extremely interested in experiments with animal heat. Personally, I am convinced that such experiments will give the best and most reliable results.
> results".

Despite his skepticism, Dr. Rascher was not one of those who would dare to ignore the offer coming from the leader of the SS. He simply embarked on a series of the most absurd "experiments" ever made, documenting them for future generations in repulsive detail. Four female prisoners were sent to Dachau from the Ravensbrück women's concentration camp. However, the involvement of one of them in the experiments (all of them passed as prostitutes) embarrassed the doctor, and he decided to report this to his superiors:

> “One of the women who entered has pronounced Nordic racial features ... I asked the girl why she voluntarily went to work in a brothel, to which she replied:“ To get out of the concentration camp. When I objected that it was a shame to be a corrupt woman, she answered without embarrassment: “It’s better to spend six months in a brothel than six months in a concentration camp.”

My racial consciousness seethes with anger at the thought of having to expose a girl, who outwardly is the purest example of the Nordic race, naked in front of racially inferior elements from a concentration camp ... By virtue of the foregoing, I refuse to use this girl for my experiments.

However, he used others whose hair was less blond and whose eyes were not as blue. The results of the experiments were duly presented to Himmler in a report dated February 12, 1942, marked "Secret".

> “The subjects were cooled in a known manner - with or without clothes - in cold water at various temperatures ... Withdrawal from the water was carried out when the rectal temperature reached 86 degrees Fahrenheit (30 degrees Celsius). In eight cases, subjects were placed between two naked women on a wide bed. At the same time, the women were instructed to snuggle up to the chilled person as tightly as possible. Then all three were covered with blankets.
>
> After regaining consciousness, the subjects no longer lost it. They quickly realized what was happening to them, and pressed tightly against the naked bodies of women. The increase in temperature in this case occurred at approximately the same rate as in the subjects who were warmed by wrapping in blankets. The exception was four subjects who had sexual intercourse when their body temperature ranged from 86 to 89.5 degrees Fahrenheit (30 to 33 degrees Celsius). These individuals had a very rapid rise in temperature, which can only be compared with the effect of a hot bath.

To his surprise, Dr. Rascher found that one woman warmed a frozen person faster than two.

> “I attribute this to the fact that when warmed by one woman, there is no

> internal inhibition and the woman clings more tightly to the chilled one. In this case, the return of full consciousness was also much faster. Only in one case was it noted that the subject did not regain consciousness and his body temperature increased slightly. He died with symptoms of a cerebral hemorrhage, which was later confirmed by an autopsy.

Summing up, this vile murderer concluded that heating the chilled with the help of women "flows rather slowly" and that the effect of a hot bath is more effective.

> “Only those subjects,” he concluded, “whose physical condition allowed for sexual intercourse, warmed up surprisingly quickly and returned to normal physical condition exceptionally quickly.”

According to the testimonies of witnesses who spoke at the Doctors' Trial, a total of 300 prisoners were subjected to about 400 "freezing" experiments. Between 80 and 90 people died during the experiments. The rest, with a few exceptions, were destroyed later, and some went crazy.

Incidentally, Dr. Rascher himself was not among those who testified at the trial. He continued his bloody deeds, realizing numerous new plans, too numerous to be discussed separately. They continued until May 1944, when he and his wife were arrested by the SS. However, they were arrested not at all for criminal "experiments" to kill people, but on charges of "that he and his wife resorted to deceit in the story of the origin of their children."

The fact is that the inveterate charlatan Rascher attracted the attention of Himmler because one of his obsessions was the breeding of more and more full-fledged generations of the Nordic race. And so a rumor spread in SS circles that Frau Rascher, after forty-eight years, had given birth to three children, who were distinguished by more perfect qualities from the point of view of racial theory. In reality, the Rusher family simply abducted children from orphanages at appropriate intervals.

Himmler, who bowed before German mothers, could not endure such perfidy. He sincerely believed that Frau Rascher really began to have children at the age of forty-eight. And he was furious when he learned the truth. Therefore, Dr. Rascher was put in a bunker for political prisoners in the Dachau concentration camp, which he knew so well, and his wife was sent to Ravensbrück, from where prostitutes were supplied to the doctor for “warming up” experiments. None of the camps made it out alive. It is believed that Himmler, in one of his last orders, ordered their liquidation, because they could be too uncomfortable witnesses.

Beam war

“Detect and destroy” - this is how, literally in three words, you can designate the main purpose of anti-aircraft artillery and other air defense systems. At first, the leaders of the Third Reich did not pay much attention to this branch of technology, since the war was on foreign territory for them. But when hostilities unfolded directly on the territory of the Third Reich itself, when the Allied aviation began to carry out raids on the cities of Germany, here, they say, the Germans realized themselves and managed to say their weighty word. Is it really? The inflation of the myth about the “wonder weapon”

saving Germany began long before the last stage of the Second World War. So, for example, in the spring of 1943, the Reich Minister of Arms and Armaments Speer said: “Technical superiority will ensure us a quick victory. The protracted war will be won by means of the Wunderwaffe. The Reichsminister hinted that the miracle weapon was about to leave the testing stage, and then ...

What was Speer hinting at in his statement? It turns out that strictly classified studies that since 1941 were carried out in the Buchenwald death camp.

It turns out that there was a team of electricians in the camp at that time, most of them

who were Germans imprisoned behind barbed wire for their political beliefs. In general, it was a German "sharashka", numbering about 100 prisoners who continued to work in their specialty. Supervision over them was carried out by several lower ranks of the SS. During the events described, the team was located in one of the barracks, not much different from the others: it was about 40 meters long and about 9 meters wide. One day the camp electricians were ordered to refurbish their

barracks. A wall was erected inside it; all the doors leading to one of the two sections of the barracks were walled up; immediately behind the department of radio engineers and professional telephone operators, a wooden fence was put together. Thus, only one access was provided to the working room - from the street. Only the camp commandant and SS commander could enter here. One of the prisoners settled in the new laboratory - a certain Blau; he

was supposed to develop a secret invention he had made a few years ago. From now on, all contacts with Blau were strictly forbidden. Only one person - an experienced electrician Armin Walter - was charged with the duty to provide all possible assistance to the inventor. Before giving this order, the camp commandant told Walter: “You are, of course, a pretty fool, but remember that Blau invented double beams and stopped the tram with these beams ...”

Who was this magician from Blau's

technique? According to Blau himself, he was an important person in the lists of military officials. "Third Reich", but for some fraud he was convicted and ended up in Buchenwald.

Here is how Reingold Lohman, one of the surviving inhabitants of that "sharashka":

> “In talking with Blau, we found that he did not have even the most elementary knowledge of physics, mechanics, electrical engineering; for example, even Ohm's law was not known to him ... "

Nevertheless, since the founding of the laboratory, Blau has put things on a grand scale. Soon the room was littered with rheostats, ammeters, capacitors, coils of wire, transformers, radio tubes, etc.

Once Walter was called to Blau. In front of the barracks, he saw a huge boarded X-ray lamp - two meters in diameter. From the technical documentation accompanying the cargo, it was clear that the giantess lamp was hastily manufactured by the Siemens concern. In several other huge boxes rested unthinkable transformers. A few days after the installation of the lamp and transformers, Walther discovered

that the inventor did not even know how to handle these devices. Somewhat later, Blau stated that in order to increase the efficiency of the reflection of the “double XX-

rays”, it was necessary to lay a cable of silver and copper in the ground around the barrack. A day later, this crazy idea was implemented.

On another occasion, Blau requested from Sweden a solid portion of monocyte sand. A special SS courier was immediately dispatched directly from Berlin to Stockholm. The Nazis spared no effort and means in order to get the long-awaited weapon.

This strange "wonder weapon" had an equally strange principle of operation. In every

In the case, the inventor himself described it as follows:

> “Modulation circuit for inclusion in a permanent ultrashort-wave magnetic field with remote control by wireless telegraphy and remote impulses. Modulation of terrestrial magnetism with the force linear field of a synchronous magnetic collection by means of the so-called eddy current effect in order to generate delta magnetic rays.

Any more or less competent engineer will only shrug his shoulders, having become acquainted with such a “delta-magnetic” abracadabra. How could it happen that right up to the very

the end of the war Blau managed to fool everyone and

everything? After the first bombing attacks of the enemy - raids on the cities of Germany - every next experiment of the inventor took place with a large concentration of high-ranking officials interested in the speedy success of the "wunderwaffe". Here is the story of one of the eyewitnesses: “In

the retinue of those invited, I saw SS generals and Gruppenfuehrers. There were also faces in civilian clothes - probably the luminaries of science: bosses from the SS helpfully accompanied them to the laboratory, where they carefully listened to what the inventor told them at length and not without aplomb. Such chaos reigned in the experimental room that it was impossible to step a step so as not to stumble upon some outlandish device. Especially there were a lot of electric panels. When Blau turned on the equipment, there was a feeling that your head was stuck in a stream of sparks. Lightning flashed around, relays crackled, fluorescence suddenly blinded. I especially remember two tricks that the inventor demonstrated in front of his retinue. An ordinary electric lamp with a tin cartridge hung on an iron nail driven into the ceiling.

The equipment had just stopped rattling, the fireworks had died down. Blau took one of the wires at the output of the transmitter and touched it to a tin cartridge - the bulb lit up with a blinding light. The astonishment of those present was great, for the trick just performed demonstrated the principle of operation of "double XX-rays". According to Blau, instead of igniting the lamp, the following effect should have been provided: the field of gravity around the enemy aircraft was broken, and thus entire armadas of bombers should have fallen to the ground. However, Blau "forgot" to explain to the guests the true secret of this trick: a few days before the performance, he brought a skillfully disguised wire to the nail, which was connected to another phase. On another occasion, Blau demonstrated his skill as a magician in such a spectacular way: after turning on the receiver at full power, after several manipulations at the remote control, he drowned out

the radio transmission. At the same time, unnoticed by high-ranking guests, of whom few could even think of possible cheating, he thrust an iron rod into one of the condenser coils; the coil, in turn, was mounted on a branch of the antenna drive.

The inductive barrier in the antenna circuit was, of course, the reason that the receiver suddenly fell silent. Nevertheless, the fact of some kind of remote action of "double XX-rays" was demonstrated in one way or another, and the charlatan could calmly continue his activities. It is interesting that after the departure of the astonished guests, the prisoner Walter repeated that

same trick. Soon, on the complaint of Blau, he was transferred to other jobs.

Now you can answer the question - how could it happen that those invited to the test demonstration could not expose the charlatan on the spot? In all likelihood, not a single idea, not a single technical trick seemed at that time so extravagant that it was impossible to seize on them, as the last hope to escape from the relentlessly impending collapse - the defeat of Nazi Germany.

Work related to the invention of "double XX-rays" was the responsibility of the highest authorities of the SS. The SS intended, using the "wunderwaffe", to radically change the course of hostilities. Which of the experts could risk in such a situation to declare the inventor of the “wunderwaffe” a fraudster? To do this, it was necessary to put your life at stake, because such a statement took away the last hope from the Fuhrer and his closest associates. But the experience of the war nevertheless showed that one cannot rely on the assurances of swindlers.

XX-rays were never used in a combat situation. Nevertheless, the search for miraculous weapons, including beam weapons, continued until

the very end of hostilities. There is another piece of evidence for this...

> “Time is moving inexorably. Fewer and fewer remain with us of those who endured the bloodiest war in the history of mankind on their shoulders. Many are gone, but
> memory remains, amazing stories remain, which our fathers and grandfathers

> told us sometimes, in the mood. Actually, front-line soldiers do not like to remember the war, but at the traditional meetings on May 9, we, the youth, sometimes managed to hear very interesting episodes from the lips of their participants themselves. Two of these stories stood out to me in particular because they dealt with very extraordinary events. To the best of my ability, I tried to give them a more or less literary form, while preserving the style of presentation of the narrators as much as possible.

And then a rather voluminous manuscript was attached to the letter of engineer Alexander Kosarev, telling about two episodes of the Great Patriotic War, which are directly related to the topic of our book. So…

And now a random mushroom picker can still see among the vast swamps, 40 kilometers from Lyuban, the remains of a strange bridge-like structure, it is not known why and how it was erected in this dead place. He does not suspect that he is meeting with one of the unsolved mysteries of the Second World War.

Many front-line soldiers remember the beginning of the blockade of Leningrad and the attempt made by the Red Army in 1942 to break through the encirclement. One of the advancing units was reinforced by two dozen light tanks, which greatly surprised the infantrymen preparing for the attack, since an impenetrable swamp lay in front of

them. However, the mystery was

soon cleared up. To Lieutenant Alexander Ivanovich Vorobyov, the commander of the lead tank, a messenger arrived from headquarters with a local forester, who claimed that a 5-kilometer walkway was laid through the swamp back in tsarist times, made of separate three-roll rafts connected by oak wedges. Over time, the path subsided somewhat and became almost indistinguishable from a swamp, and very few local residents remembered its existence. It was this opportunity that our command decided to use to deliver a surprise strike actually into the deep rear of the German group. In the early morning, as soon as dawn broke, the units allocated for

reconnaissance in force began to pull up. The scouts led by the forester were the first to advance on the path. In the predawn darkness, guided almost by touch, they marked with special markers the position of the floating road, along which the tanks could pass.

Having reached, as it seemed to them, solid ground, the scouts contacted the command by radio and reported that the path was marked and clear of mines. At 5

am, the front-line artillery began a methodical shelling of enemy positions, but in this sector, since the targets were not sufficiently reconnoitered, it was decided to conduct only harassing fire, throw the tank battalion forward and support it with artillery if the strike units met resistance. At 5.30 an order was received to

advance, and two dozen tanks, surrounded by infantrymen, carefully moved along the marked crossing. All the cars went with open hatches in case the flooring of the crossing would not withstand and some would fall into the quagmire. With great care, the column covered about two kilometers, but the road worked to the conscience passed the test with honor. All this time, artillery supported the attackers - not so much with effective

fire as masking the noise of engines with firing. Finally, the tankers saw figures of scouts guarding the approaches to the gati from the enemy. They quickly sorted out two people at a time and escorted each tank to the already planned starting positions. The Germans have not yet made their presence known.

After waiting for the stragglers to catch up, the tanks and infantry moved forward. After about 1.5 kilometers, the first skirmish occurred. However, the Germans responded sluggishly to our furious fire and gave the impression that they did not expect the appearance of the Red Army at all, and when they saw them in front of them, they tried to retreat as soon as possible, but did not organize a rebuff. Among the killed Germans there were quite a few dressed in civilian clothes.

The actions of our subunits at that time were hampered by the fact that the area was overgrown with dense, dense forest, and in addition, our commanders, not knowing where the enemy was and what his forces were, acted very carefully, remembering that in the event of a strong

a counterattack, especially to the flank, there could be a problem of returning through the gat.

By about 9 am, the scouts reported that they had reached another floating crossing, along which, according to them, disparate and rather small groups of Germans were hastily and in complete panic being crossed. Lieutenant Vorobyov, at the head of a group of several tanks, rushed towards her, generously watering the thickets and ravines that came across along the way with machine gun fire. They quickly drove out to a wide clearing, which in a few minutes led them to a cliff, from which a plank-log road went into the distance across a swampy plain, based on floats made of aviation gasoline barrels tied with cables. In the distance, about 500 meters away, the backs of people flickered, but the tankers did not shoot at them, preferring to continue

combing the area where they found themselves. Pretty soon it became clear that ours were on a kind of island surrounded by a swamp. And during a more detailed examination, the soldiers stumbled upon a small village, in which, in addition to residential barracks, furnished, however, quite

decently, several rooms were found equipped for workshops and a design bureau. There they found a large number of drawings, pencils, rulers and drawing boards, from which the tankers immediately sawed more comfortable seats for their vehicles. At this time, a message came from the scouts that they had found strange pits in the depths of the forest, and in them even more strange anti-aircraft batteries. Tankers moved in the indicated direction. Having walked about a kilometer

along a freshly cut clearing, we came to two wide, rectangular pits dug about 100 meters from each other. In the center of each were four large-caliber anti-aircraft guns. They were located at the corners of the square, in the center of which there was a lattice plate-shaped structure, sparkling in the sun with thousands of mirrors.

When the tankers descended into one of the pits and began to inspect the finds, they saw that all the guns had automatic shutters and a pickup system using electric motors and, moreover, were connected to a strange mirror with thick, arm-length cables. Soon they discovered that bundles of cables lead from both batteries to a small grove between the pits. In it, under a camouflage canopy, they found a powerful diesel power plant mounted on a trailer along with a container for diesel fuel. The control panel for the entire system was located 20 meters from it in a wooden box with loopholes.

At this time, a strong explosion rang out in the distance. Literally a minute later, the soldiers left at the German crossing radioed that it had blown up. The tankers contacted the command and reported the situation. In response, an order came: by 20.00 to return to the location of their troops, taking away, as far as possible, everything that was found in the design bureau and pits. After this order, most of the units moved back to the exit from the island, and

several tank crews and about a company of infantrymen remained at the pits. The soldiers, using the tools found in the barrack settlement, began to dismantle the control system of one of the guns and cut the connecting cables with axes. Others tried to unscrew from the strange design a searchlight with thick corrugated glass, which stood in the center of a mirrored paraboloid. The rest hitched a diesel power plant to a truck seized in the village. Suddenly, flames erupted from under one of the searchlights and an explosion was heard. Everyone rushed to the ground - thousands of pieces of mirrors and fragments of the structure fell from above. Before

they had time to rise from the ground, an explosion gasped already from another pit. Fearing an explosion of a warehouse with anti-aircraft shells, the Red Army men considered it a blessing to leave this dangerous place. And the tanks remaining at the pits and a truck with an attached power plant, on which 30 people climbed, hurried to move to their crossing after dark. But when the convoy entered the ditch, we had to slow down, as it would have been easy to slide into the bog. Before the tankers had time to go even a kilometer along the gati, a new powerful explosion literally smashed the diesel power plant to smithereens and dumped the truck into the swamp.

Since two sections of the flooring of the gati were destroyed at the same time, the "rearguard" had to spend the night in the middle of the swamp. Only the next morning did she arrive in time to rescue the tankers.

a sapper company that built a bridge connecting the surviving sections of the gati and rescued those who were trapped. But the

adventures of the soldiers participating in the offensive operation did not end there. Literally the next day, a general interrogation of all those who had visited the swamp island began in a special department. Those who said that they somehow came into contact with anti-aircraft guns in the pits or even studied them were taken away by special officers in an unknown direction. They never returned to their unit, and their fate is unknown.

You can try, from the current positions, to reconstruct the principle of operation of those two batteries that were discovered on the swamp island, Kosarev writes further. Apparently, this was one of the first, if not the first attempt by the Germans to create an automatically operating anti-aircraft installation, which at night was supposed to find, track and destroy Soviet bombers attacking Berlin and other cities of the Reich. The development, manufacture and testing of prototypes of these weapons, apparently, were carried

out in a complex, as evidenced by the concentration in one place of both designers, and mechanical production, and the prototypes themselves. It is very likely that the German inventors tried to capture the reflection of a light beam from a narrow spotlight and used a mirror paraboloid for this. The aiming of the searchlight at the target, apparently, was carried out with the help of electric motors from the control panel that was placed aside from the batteries. As soon as the light

reflected from the aircraft was concentrated at the focus of the paraboloid, in which, apparently, there was a photocell, the mechanism automatically turned on, firing the gun and reloading it with the help of solenoid electromagnets.

To increase the probability of hitting and the density of fire, each of the searchlight installations was equipped with four guns, which, of course, should have increased the effectiveness of firing. Of course, it can be said that the light

reflected from an aircraft flying at high altitude is extremely weak, and flare from the ground could easily paralyze the operation of this complex optical system. But, apparently, the German designers took this danger into account. Let's not forget where they set up their training ground. Not only was a marsh island selected, several tens of kilometers away from the nearest settlements, but the anti-aircraft systems themselves were placed in pits located in a dense coniferous forest, which gave an additional guarantee of protection against accidental light already on the island itself.

> “A former military pilot Alexei Lvovich F. (he asked not to give his last name) told me about another interesting case,” Alexander Kosarev continues his story. - These events happened to him in the summer of 1944 during the liberation of Belarus. F. then served in the assault aviation regiment and almost every day flew out as part of his link to bomb the retreating German troops.

But one evening he was summoned to the regimental commander. The colonel seated F. in front of him at the table and began to ask what aircraft he had flown before his current service. F. answered that since the beginning of the war, for almost two years, he had been “walking” on the “corncob”, first as a postman, and then as

an instructor. - That's fine, - the colonel rubbed his hands, - you will need to throw one person to the rear of the Germans.

He got up, picked up a map rolled into a roll, laid it out on the table and pointed to a point in the dense forest near Baranovichi.

Will my passenger be skydiving? F. asked. “No, my dear,” the colonel

grinned, “such people have no business with a parachute. Briefly speaking, go rest, tomorrow you will receive an order, but for now I will give you a day to prepare the aircraft ...

F. spent the whole next day at one of the two U-2s available in the regiment, preparing and testing it for tomorrow's flight. When it got completely dark, F. was again called to the headquarters

dugout. This time, in addition to the colonel, there was a certain person in civilian clothes in it. The Colonel introduced them to each other. From the way the guest got up, greeted and talked, F. immediately realized that this man absolutely never had anything to do with the army. He was fat, clumsy, and felt most confident only when he sat at the table of the unit commander.

After a brief acquaintance, the colonel ordered the orderly to serve tea and not let anyone in. He again spread the map on the table and explained the problem to F. in detail, often repeating himself. “You take off exactly at 3.15. At 4.30, maximum 4.45, you have to do a few laps in this area. Your guide will be the turn of the river in the northwest. The landing signal will be paired shots of red rockets in the direction of the forest clearing. Look, do not miss, - he looked into the eyes of F., - the clearing is an old one, overgrown, you can see, and you need to deliver Comrade Lavrov safe and sound. You will cross the front line here, near the village of Zaimishche. This, however, is off the route, but that's okay, from below the noise from your rumbler will be slightly disguised by our "gods of war". - He laughed, straightened the folds of his tunic and continued: - After passing the front line - remember, at 3.35, - turn sharply to the north, and at 3.55-4. 00 is also sharply due west. Just in case, blue, you need to cover up your tracks. That, perhaps, is all. Report the situation upon landing. All clear? - Yes sir! F. replied. “Only I don’t have a radio on the corncob!” - It's nothing, - the colonel waved it off, - our, um, partisans have a walkie-talkie. If not questions - then go, sleep a bit, soon take off ...

After sleeping for four hours, F. was raised by a pre-warned orderly, trying not to wake anyone, carefully left the tent. Two technicians and a waitress with a thermos and sandwiches were already waiting for him at the plane. Soon a yawning Lavrov appeared, wrapping himself in a quilted jacket from the cool of the night.

One of the technicians brought a stepladder, and with great difficulty they squeezed the passenger into the second seat. Food supplies were also loaded to him, for which he immediately set about. F. warmed up the engine, taxied to the runway and looked at the glowing clock. It was already 3.12. At that time, a blue light blinked at the end of the runway. "It's time," thought F. and pushed the throttle. U-2, easily running up, soared into the sky. Turning on the backlight and looking at the map, our pilot turned the car in the direction of the village of Zaimishche, trying to move at such a speed as to reach it at exactly 3.35.

He flew at an altitude of about three kilometers, hoping to turn off the engine just before the front line and slip through it, planning, but then he saw a lot of bright flashes on the ground and dotted tracks from Katyusha shells flying towards the German troops.

In order not to fall under a stray shell, F. still gained altitude and turned the plane to the north, leaving the front line boiling with fiery flashes behind. It had already begun to dawn when they arrived at the said area. F. reduced engine speed and began to gradually decline, describing eights in the air, which allowed him to observe the earth and at the same time control the sky in case of enemy fighters. Suddenly, two red lights of rockets appeared from the forest thicket, indicating the landing site. While the pilot turned around and lay down on the course, a double shot of red rockets was repeated. F. looked around. His passenger slept peacefully with his face buried in the collar of his padded jacket.

Deciding not to wake him up, F. took the plane into a narrow gap in the thicket. Part of the clearing was cleared of bushes, but those who prepared the planting could not rid it of half-rotten roots sticking out in some places. On one of them, finishing the run along the clearing, the plane hit the right wheel rack. The blow was strong. The plane abruptly turned around, and only dense thickets of hazel, in which the U-2, which was ready to tip over, got stuck, saved them from the catastrophe. For some time, F. was unable to move, and finally came to his senses only on the ground, where people ran up to help him down. They also pulled the plane out of the bushes and carefully removed Lavrov from the second cockpit. It was clear that during such a landing he suffered much more than the pilot. His hands dangled limply, and his face was covered in blood. - Alive? F. asked, approaching people dressed in unusual uniforms who were carrying Lavrov into the thicket.

“Alive, it seems,” one of them answered, “let's go and they will bandage
you too ... F. moved after them. After about half an hour of walking, they came to the camp of the "partisan detachment". The entire camp consisted of 4 or 5 tarpaulin-painted trucks with canvas vans and two small tents set a little way off. Lavrov was taken to one of them, and the pilot was invited to another. In it, on a table, stood a German field radio, two car batteries, and several small chests used as chairs and as tables. Heated canned food was brought in, and while F. was refreshing himself, a bruise on
his cheek was covered up, and the radio operator contacted the command and reported both the arrival of the aircraft and the unsuccessful landing. About half an hour later the answer came. The pilot was asked to wait for Lavrov's recovery, but if this did not happen within three days, then he was ordered to take him back. All that remained was to wait.

F. spent the first two days at the plane, using unusual "partisans" to repair a broken landing gear and clear a section of the clearing to facilitate takeoff. Quite quickly, he guessed that he was at the base of a detachment of saboteurs who had captured several trucks from the Germans, but something about them turned out to be such that a consultant from the mainland was required. Apparently, Lavrov was that consultant, but he was just unlucky.

Extremely intrigued, F. waited for the moment when most of the inhabitants of the camp went to clear the runway, and climbed into the back of one of the trucks. There was nothing interesting there, except for a few large metal boxes. The pilot, out of curiosity, opened two of them. In the boxes lay incomprehensible devices and unprecedented tools. Closing the boxes and slipping out of the truck, F. moved to another one, since they were nearby, covered with a camouflage net. It contained some kind of tubular structure made of silver-colored metal, which had a system resembling a cannon aiming mechanism. F. recalls that at one end of this "pipe" there was something like a lens, and the casing was locked with latches, like a suitcase. In the third truck, occupying the entire body, large “coils”, as it seemed to him, of thick cables were stored, the only thing that was embarrassing was that where these cables ended, instead of an electrical connector or a cut of wires, a mirrored glass surface shone. The ends of these "cables" were so polished that they were used instead of a shaving mirror.

In business and worries, three days quickly flashed by. Lavrov had a severe concussion, and his condition did not improve. Bearing in mind the earlier received order, we decided to take him out before sunset. Meanwhile, the front line was rapidly approaching, and a small detachment of saboteurs was in extreme excitement. About an hour before departure, F. noticed that three of the detachment began to cover the cars with brushwood and hang explosive charges under the gas tanks. Apparently, not hoping for a successful breakthrough on trucks with unknown equipment to their own, the saboteurs decided to destroy them. Takeoff
and return back were without complications. True, his regiment had already relocated and the airfield was already in the location of another unit. Lavrov was sent to the hospital, and our pilot returned to his comrades-in-arms...

> “Let's think a little about what the pilot could see in the Belarusian forests of 1944. Guided like a gun, the installation is not like a searchlight - it should be much larger in diameter. If this is a jet installation, then what does the optical design on one of the sections of the silver pipe have to do with it. What about the strange "coils", more similar in description to the light pumping lamps of the first ruby lasers? In short, it was not a searchlight, not a cannon, not a rocket launcher - an experienced pilot met with such equipment more than once during the three years of the war. By the way, in one of the boxes he saw a large number of glass prisms and two-way mirrors.
>
> Did the Germans really conduct experiments on the use of lasers for military purposes already in 1944? After all, it was clearly not by chance that our 12-15 saboteurs were sent to capture these vehicles. Now it is unlikely that there will be an opportunity to establish the truth, too many years have passed, but it seems that such a version has some right to life ... "

This is how the engineer finishes his, you will agree, rather unusual manuscript. What to her can add?

Version one. Judging by how competently the manuscript is built, how the author knows how to put an end to it in time, it is obvious that the person has certain literary abilities, he has a good command of the pen. That is why he could simply come up with all these stories from beginning to end, stylizing his stories under the memories of former front-line soldiers.

Version two: imagine that the engineer himself did not invent anything, really honestly recounted what he heard. Could, in principle, German scientists and engineers create the described designs and what were the prospects for their use as that “superweapon” that the Fuhrer tirelessly trumpeted? Yes, they could. Recall

that, according to legend, ancient Archimedes used parabolic mirrors when he burned the Roman ships that attacked his native Syracuse. Immediately, the task was much simpler: it was only necessary to concentrate the reflected light radiation into a point. But this task is carried out in any reflecting telescope, and, thank God, they began to be built in the last century.

The question is, how effective was such a system? Perhaps even worse than those sound direction finders that our army was equipped with before the start of World War II. The system could only work under sterile conditions; any extraneous illumination would lead to the fact that the battery would hit white light like a pretty penny, and its efficiency would be close to zero. In what, probably, its creators were convinced. And the baton was taken over from them by the creators of the laser.

In principle, his device does not contain anything that was not known to the physicists of the 1940s. So it is quite possible to assume that bright minds were found not only in the USA or in the USSR, capable of inventing and constructing a quantum generator. And in Germany, there could well be specialists of the appropriate level. At least

this fact can serve as an indirect proof of this. More recently, it has become reliably known that the prototype of the first tube computer was created not in the United States after the end of World War II, but several years earlier, in the depths of the Ministry of Communications of the belligerent Reich. However, the development was not completed for one simple reason - in Germany in 1944 there were no "extra" several thousand radio tubes needed for experiments - they all went to the front, were used in military transmitters and receivers.

Another thing, how high could be the power of such a laser? What could it be used for? It is unlikely that its power was sufficient to cut planes in the air with a fiery beam - this is a rather difficult task for modern laser systems. But to use a laser beam to blind the pilot, or rather, to target the same anti-aircraft guns. After all, it is much easier to catch the reflection of a laser beam, the system will suffer much less from extraneous light. But, you see, even being brought to the stage of mass production, such a system does

not in any way pull on the role of a “superweapon” capable of turning back the course of World War II. This is still not a hyperboloid for you ...

There was another reason not to bring this invention to mass production. Guiding anti-aircraft artillery and other means of air defense with the help of radar turned out to be much more practical and attractive from many points of view. And the Germans knew about it. At least such a story testifies to this.

All-seeing eye

When in the spring of 1939 the German secret service received a report that a system of defense measures was being developed in England, according to which fascist aircraft should be intercepted and destroyed in the air long before approaching the coast of Great Britain (obviously, it was about radars), Goering immediately issued an order : allocate one zeppelin and instruct the airship commander to cruise in the sky over the Baltic Sea for several days. The air giant equipped with radio equipment should have been, according to

Goering, locate the enemy's radar installations. However, upon the return of the zeppelin, the crew reported: no traces of a radar signal were found.

The Germans calmed down. It never occurred to anyone that the installations of the British were immediately turned off, as soon as the slowly flying reconnaissance aircraft approached the radar visibility zone. Imagine the astonishment of the would-be strategists from the blitzkrieg, when it was subsequently discovered that twenty radar installations were functioning flawlessly on the coast of England.

> “The idea of radar arose independently among different people and in different countries of the world, after the impulse technique proved suitable for detecting objects such as aircraft and ships. Probably, this idea arose almost simultaneously in America, England, Germany and even in Japan.

So it is written in the official history of the radar, published in the United States shortly after the end of World War II. However, if everything is fair with regard to the listed countries in the above quotation, then why is the USSR not even mentioned in a word here? Probably because then one would have to admit: in our country, work on radar began at least ten years earlier than abroad. Here is the testimony of a man who stood at the origins of domestic radar - Professor P.K. Oshchepkov.

> April 1932. I am in the team of the Pskov anti-aircraft artillery regiment, - he writes in his memoirs. - We have been tasked with mastering the specialty of an anti-aircraft gunner as soon as possible.
>
> In half a year, we must undergo combined arms training and master the theory and practice of anti-aircraft artillery fire. They should make reserve commanders of anti-aircraft artillery platoons out of us.”

The regiment commander V. M. Chernov turned out to be a man of great erudition and high culture. He repeatedly told his subordinates that the technology of that time was only at the initial stage of development of anti-aircraft firing technology, that enemy aircraft were making more and more progress in terms of increasing the speed and ceiling of their flights, and that therefore any of our current improvements in shooting technology may eventually turn out to be only outdated, but completely unusable.

The main method of shooting at aircraft then was the tabular method. In special book-tables, a set of calculated data for firing was given. For all sorts of points in the airspace in the reach zone of the guns, the setting data for the sight, remote tube of the projectile fuse, lead angle, etc. were calculated in advance. But, in order to use the tables, it was necessary to determine the flight course of the aircraft very quickly and with great accuracy, its height, speed and location (that is, the distance to it), and then, with a minimum loss of time, find the desired column in the tables and command the found installation data to the gun crew with even greater speed. It took precious seconds, during which the plane could have moved far from the place of its notch, and the probability of a projectile meeting with it is catastrophic

fell...

> “In the conditions of the rapid development of aviation in those days, people had to not only continuously improve their knowledge, but also to some extent turn into a “man-automaton”.

There were few textbooks on the theory of anti-aircraft artillery fire at that time, it was difficult to get them. In the classroom, of course, we could not remember everything, and besides, not everything was told to us. So I decided then to write a book on the theory of anti-aircraft artillery fire for intra-regimental circulation. The leadership of the regiment supported me in this. I set about the book with great desire, tried to write as clearly as possible, supplied it with drawings and diagrams. The business proceeded successfully, and after about three months the first

the little book I wrote called "The Theory of Anti-Aircraft Artillery Fire" was printed on a glass printer and went from hand to hand. It was used in the classroom, it was even given lessons.

Probably, as in all the first, there were many mistakes and omissions in it. I don't know how useful it was for others, but for me it was extremely useful. In the process of working on it, I deeply felt the theory of anti-aircraft artillery fire and understood many of its weaknesses. I realized that time, namely time, decides the success of the whole thing. Therefore, time must be reduced to a minimum in all processes of this technique - from the moment the target is located to the moment the projectile fired by us meets it. This idea firmly stuck in my head then and has not left me to this day, although world technology has made tremendous progress in this direction.

They say that the goal set for oneself is given only to those who pursue it relentlessly. I began to think more and more about how to find ways to reduce working time - this is the term for the time required to solve a problem or to set mechanisms in motion.

Very soon, the analysis of the task led me to the idea that some of the commands given to the gun crew could be excluded. I was able to show mathematically

that at any given elevation angles (that is, the angles of inclination of the target to the horizon), for each specific range to the target, the numerical value of the sight and the numerical value of the remote fuse tube are in a certain ratio. This ratio can not only be expressed as a mathematical formula, but also plotted as a graph directly on the aiming drum of the gun. Then, when only one command is given, for example, when the tube value command is given, it will be possible to set both the sight and the number of the remote ring of the tube at the same time. This meant that out of the four commands given to the gun crew, one could be excluded. Thus, the time required to issue commands will decrease, and will decrease quite significantly - by my calculations, by about 25 percent.

According to the calculated data I compiled, aiming drums were converted on four guns. Experimental firing was carried out at a training ground near Leningrad. The results of the experiment confirmed that in this way it is really possible to reduce the so-called working time when a command is given by the indicated number of percent. However, it needed to be cut even further."

Nevertheless, the results achieved were enough for higher authorities to become interested in Oshchepkov's work. At the end of the summer, he was introduced by the regiment commander to the head of the inspection of the Air Defense Directorate of the Red Army, I.F. Blazhevich. He wanted to see the innovator in person.

> "And I must say that by that time I already had a lot of thoughts about ways to improve the technique of anti-aircraft artillery firing, and I was glad to meet with the inspector," Oshchepkov continued his memoirs.

The negotiations were successful. The young specialist reported that, according to his firm conviction, optical detection devices, due to their limited action (night, fog, clouds, short range, etc.), would be powerless against aircraft at long distances, although they themselves could have and high accuracy and high speed. Sound detection is unreliable because sound is carried by the wind and has a low propagation speed (330 meters per second), and ultimately the amount of sound energy reaching the observer is independent of the observer. This is not a searchlight, which allows, in extreme cases, to increase the intensity of light and thereby increase the range of its action. The sound is emitted by the aircraft itself, and the farther it is from us, the smaller the proportion of sound energy

comes to us.

> "By that time, various companies abroad began to" sculpt "all kinds of detecting systems based on a combination of searchlights,

sound pickups and automation, - Oshchepkov shows his awareness. - Such, for example, are the Sperry, Kogned, etc. systems. Abroad, a whole boom was raised around these devices. They were advertised in every way as the latest achievements in aircraft detection technology.

Let us interrupt for a while the story of our illustrious designer in order to insert one significant remark into our story. So, it turns out that Kosyrev's story about the mysterious battery found in the swamp has a very significant support - the Germans really could conduct such experiments. But did they go ahead? Or just, when impatient, tried to repeat foreign experiments?

Most likely the second assumption. And if so, it turns out that the vaunted Germans could not avoid the recurrence of a common disease. After all, our
domestic technology also did not escape it. We, following the example of the West, also, as already mentioned, began to build various “prozhsvuk” systems before the war, and many probably remember how during the parades on Red Square, anti-aircraft guns were carried in front of anti-aircraft guns, such “octopuses” from intricately curved sound-catching pipes .

“We didn’t have such equipment in our regiment yet,” Oshchepkov continues. We saw her then only in pictures in magazines and newspapers. But they have already managed to criticize it, since they came to the conclusion that this vaunted technique will also run into a range.

Domestic specialists already then came to the conclusion that one could not hope either by sight or by ear to identify the approaching enemy aircraft. But how to detect enemy equipment even on the distant approaches to protected lines? This question worried the military leaders more and more as the flight performance of aviation increased. That is why, apparently, Oshchepkov was listened to with such attention that day by both the inspector and everyone who accompanied him.

“It was clear to me,” he writes, “that no methods of target detection based on capturing the radiation emitted by the target itself could be suitable here. I began ardently arguing that the key to solving the problem can only be a transition to fundamentally new methods based on the use of energy sent by the observer himself. Only such an approach to the problem of detecting air targets can ultimately lead to the desired result.

At that time, it was not yet clear how to solve this problem. Even the contours of the new technology that was supposed to replace all and all systems of projector sound could not be imagined. However, many liked the general approach to the problem. Arguments about the divergence of scissors between the possibilities for further improvement of the sound system and the possibilities for increasing the flight performance of aviation seemed convincing. Everyone agreed that already in the very next few years, air defense would be in a difficult position. It was necessary to look for a way out.

“However, my references to the fact that such energy that can be sent from an observer to a target can be electrical energy, as the fastest and most advantageous in terms of propagation range, did not convince anyone,” states Oshchepkov. - The argument that there is already radio communication for hundreds and thousands of kilometers was poorly taken into account. Only one Vladimir Mikhailovich Chernov agreed with me with his thick bass.

Among those present, there was almost no one who would know the conditions for the propagation of radio waves. And not everyone knew physics well either. Everyone, however, agreed that it was necessary to look for such energy that would spread over long distances.

"I was almost sure that my meeting with the inspector was in vain," Oshchepkov later recalled. "One day seemed to be enough for the Inspector to forget about her in the midst of all sorts of other things. But it soon became clear that I was mistaken in this. In less than two months,

the regiment received an order to send a sensible fellow to Moscow, to the Main Directorate of Air Defense of the Red Army. Blazhevich reported interesting experiments and arguments to the head of the department, M.E. Medvedev, and his deputy, P.E. Khoroshilov. They decided to entrust Oshchepkov with the questions of the new VNOS technology, which, translated into human language, means the service of "air surveillance, warning and communications."

At the end of December 1932, the newly minted platoon commander was in Moscow and began to performance of their duties.

"The department where I arrived was new both in composition and in terms of the tasks assigned to it," writes Oshchepkov. - This, apparently, determined the spirit of creativity, which embraced everyone here - from the head of the department to the ordinary worker. I really liked this environment, but the level and scale of the work was pretty embarrassing. It seemed that I could not cope with the abundance of tasks. Yes, probably, I really would not have coped if it were not for the constant support from many management employees. Fascinated by the idea of a "revolution" in the technique of detecting air targets, I did not

miss the opportunity to return to its discussion again and again. We discussed this problem for a long time with P. E. Khoroshilov, head of department M. E. Medvedev, head of the expert sector S. A. Chausov, head of the VNOS service P. V. Vinogradov and many other employees of the department. Were there any doubters? Of course there were. There were more pessimists or optimists - it is difficult to count now, but since the new

direction nevertheless prevailed, there were apparently more optimists.

By the middle of 1933, the opinion about the possibility of using radio waves to detect aircraft in the Air Defense Directorate of the Red Army had already become so strong that it was decided to report this to the People's Commissar of Defense of the USSR K. E. Voroshilov, to ask him for permission to organize research work in this direction and determine them financing. I was instructed to draw up a

memorandum addressed to the people's commissar of defense. With the active participation of P. E. Khoroshilov, such a note was drawn up on June 18, 1933. N.N. Nagorny, secretary of the party organization of management, especially insisted on compiling the note at that time.

Approximately one and a half to two months later, a meeting with K. E. Voroshilov took place. This meeting was also attended by the first deputy people's commissar of defense, who was in charge of armaments and new equipment, Mikhail Nikolaevich Tukhachevsky.

As far as I had the strength and knowledge, I tried to draw their attention to the discrepancy between the existing direction in the development of technology for detecting air targets and the true tasks in this area, especially in the near future. It didn't take long to convince any of those

present of this. M. N. Tukhachevsky, distinguished by a clear, sharp and quick mind, himself directed the conversation. He had already calculated something in his mind and, for persuasiveness, gave an example:

– With an increase in the speed of bomber flights, the distance that an aircraft travels in one second will gradually become commensurate with the distance traveled by sound in the same period of time. Therefore, if the plane is, for example, at a distance of 10 kilometers, then the sound from it can reach the observer only after 30 seconds. During this time, an aerial target, even at a speed equal to only half the speed of sound, can deviate from the course by 5–6 kilometers in any direction, so an attempt to determine its true location in space based on sound direction finding can really lose all meaning. The possibilities of flying at night, in the clouds and beyond

clouds leave us no other choice than to immediately take up the development of the idea of radio detection of aircraft, although much of it is still unclear to all of us. It is necessary to organize a wide front of research in this area as soon as possible. It is necessary to test the method at least on models.

The People's Commissar of Defense said that there would be money for such research, and asked how much money was needed to start work. I replied that we would now cost 250-300 thousand rubles.

M. N. Tukhachevsky ordered Oshchepkov and Khoroshilov to draw up a work plan, include it in the general plan of measures for the new technology of the People's Commissariat of Defense, and also recommended that at least approximate tactical and technical tasks for research work be developed. He immediately called the Armaments Directorate and ordered that advanced research be included in the list of the most important works of the People's Commissariat of Defense with the obligatory completion of the first part of them as early as 1934.

Such support from the highest leaders of the People's Commissariat of Defense meant the green light for all research in this area ... But as soon as we started discussing possible options for

future technical devices and, in particular, the principles of their operation, it immediately became clear that there was no consensus on this matter. , especially among those who participated in the discussion of communications and surveillance technology workers, Oshchepkov recalled further. - The approach to the problem and the means chosen for its solution were too unusual. There were no examples - neither ours nor foreign ones, on which one could
lean on. In

order to involve wider circles of military workers in the discussion of the problem, it was decided to publish the report submitted by Oshchepkov to the people's commissar after some revision. Such work was completed very soon, and the material was already published in February 1934 in the form of a separate article in the journal "Collection of Air Defense" under the title "Modern problems in the development of air defense technology."

The principle of operation of electromagnetic detection of aircraft in this article was stated like this:

“The essence of detecting aircraft using electromagnetic waves lies in the fact that if you have a source for generating ultrashort or decimeter waves and even centimeter electromagnetic waves and direct the radiation of these waves from the generating source into space, then by directing such a beam of electromagnetic waves at any object, you can always get the reflected electromagnetic beam. Taking such a reflected beam and determining

the direction of its propagation, one can very accurately determine not only the direction to the reflecting surface, but also its location. By measuring the time from the sending of these waves to their return reception, which can be done by modulation, that is, by superimposing an additional frequency on the fundamental frequency, or by measuring the phase of the received electromagnetic waves, one can accurately determine the time of passage of these waves. And since the speed of propagation of electromagnetic waves is constant, the distance to the reflecting surface, that is, to the aircraft, will turn out as a consequence.

From this it can be seen that the idea of radio detection in our country by this time had already very specific content.

Another important consideration of the article concerned the possibility of light display of moving targets at the air defense command post. It was about new principles for creating light screens - light planes used in such points. That is, in other words, it was about the radar screens that are now used at all radar detection stations.

In October 1933, an order was issued to organize a special design bureau (SKB). Due to the fact that by this time P. E. Khoroshilov, one of the most consistent and staunch defenders of the idea of radio detection, was transferred to Leningrad to the post of head of advanced training courses for air defense commanders, it was decided

organize SLE on the territory of these courses. Oshchepkov was appointed head of the SLE.

The task of the created bureau included the development of general schemes of the radio detection system and special non-standard components and parts for it. This bureau developed successfully, and by order of October 7, 1934, it was entrusted with the development of a new panoramic-type radio detection system under the code "Electrovisor".

The year 1934 began with preparations for a meeting at the USSR Academy of Sciences. “In the very first days of January, I met with Abram Fedorovich Ioffe,” Oshchepkov continues his memoirs. - He listened to me very carefully ... As for the main idea of the possibility of using electromagnetic waves for the early detection of air targets, he had no doubts about this. He, apparently, had already thought through a lot by this time and therefore spoke with conviction, confidently. The only thing he had some doubts about was the possibility of using very short waves for this purpose.

He believed that the power on such waves would be negligible and, in addition, the main reflected beam of such waves, in his opinion, would go away from us, and not towards us, since the phenomenon of optical reflection should be more pronounced on these waves. The beam hitting the wing of the aircraft was supposed to be reflected at approximately the same angle and go towards the enemy. At longer wavelengths (a meter or several meters), in his opinion, such a system should work better. Diffusion reflection should be observed here. To remove possible disagreements, Ioffe

suggested convening a special meeting on this problem. It took place on January 16, 1934. The most prominent Soviet scientists and engineers mentioned above, working in the field of radiophysics or in branches of knowledge close to it, were invited. The final minutes of the meeting recorded the following:

> “We
>
> listened: Message from the representative of the Air Defense Directorate of the Red Army, engineer Oshchepkov, head of the Advanced Courses for Air Defense Command Staff Comrade. Khoroshilov and academician A.F. Ioffe about the urgent need in modern conditions of air defense, in order to ensure the combat use of air defense technical means of designing devices that ensure the detection of aircraft at high altitudes - about 10 kilometers - and a range of up to 50 kilometers in conditions that do not depend on atmospheric conditions and time of day. Decided: As a result of an exchange of views on the fundamental
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> importance
>
> and timeliness of
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> question and possible means of resolving it, the meeting considers:
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> 1. Of the technical means that can ensure in the shortest possible time the development of devices that ensure the detection of aircraft in the above conditions, there may be devices built on the principle of using electromagnetic waves of a fairly short wavelength (decimeter and centimeter waves). At the same time, relatively sufficiently powerful
>
> generators of decimeter and centimeter waves should be developed that direct the electromagnetic radiation of the system, as well as receiving devices that provide, by the reflected electromagnetic beam, determining the location of aircraft (their coordinates), their number, course of movement and speed.
>
> The determination of coordinates in the first case can be done as with additionally installed receiving apparatus, the possibility of determining the distance from the same point is not ruled out, which, with its further development, can be widely used in the technique of anti-aircraft artillery firing at an invisible target.
>
> 2. At the same time, in view of the novelty of the question raised about the use of electromagnetic waves for this purpose and the need for more long-term research work in this direction, the meeting considers it necessary to develop other methods of detection. In particular, to detect aircraft at dusk, use specially designed optical systems and

carefully re-check the results using methods based on the principle of sound direction finding and infrared radiation."

The decision of the described meeting testifies that it is our country that is the birthplace of the idea of radar. By this time, the idea of radar was recognized in our country not only in terms of its intended purpose, but also in terms of methods of implementation.

In the adopted decision, it is clearly emphasized that with the help of pulses (portions) of electromagnetic waves of a sufficiently short wavelength, it is possible not only to detect air targets at large distances, but also to determine their coordinates (anti-aircraft fire, guidance of fighter aircraft, etc.). And we have no right, therefore, to forget all those who contributed to such a clear formulation of the problem at a time when nothing was known about it in the world.

We did not yet have the word "radar" at that time. It came to us in 1941 together with stations purchased abroad such as "Son", etc.

During the period when the first work on radio detection (radar location) began in our country, there was no information about similar work carried out abroad, and could not be, because, judging by the official American history of the radar, in the West such work in there was no time at all. This follows from the following. The official U.S. history of

the invention of radar states: “In 1935, at the urging of Vice Admiral Bowen (then head of the Marine Committee’s technical bureau), the U.S. Congress appropriated $100,000 to the Naval Research Laboratory for scientific work. This was the first amount allocated specifically for the development of radar technology. The same official history of the radar reports that "the first contract with industry for the manufacture of six stations for detecting aircraft

was signed in the month of October 1939." But in an article published in 1946 by Luk magazine by two Americans - E. Raymond and J. Hucherton, one of whom was a long time adviser at the American embassy in

Moscow - it says:

"Soviet scientists successfully developed the theory of radar several years before radar was invented in England." In this they are right. As far back as 1933, we actually drew up specific plans for targeted research, and in 1934, as will be seen now, the first operating stations for detecting aircraft were already built on the principle of a reflected electromagnetic wave. On February 19, 1934, the Air Defense Administration concluded an agreement with

the Leningrad Electrophysical Institute to conduct research on measuring electromagnetic energy reflected from objects of various shapes and materials. The same institute was instructed to manufacture a transmitter and receiver for conducting experiments on the actual detection of an aircraft by the wave reflected from it. Work was also carried out at the Kharkov Institute of Physics and Technology (in the laboratory of Professor A. A. Slutskin), at the

Design Bureau of the Air Defense Directorate of the Red Army, at the Svetlana plant and other enterprises. All work in this direction was carried out according to a predetermined plan and was considered a matter of great national importance.

As a result, by the middle of the same 1934, domestic experts had direct evidence of the correctness of the method. The first experimental stations were built, their tests were carried out, which gave exceptionally encouraging results.

The test reports directly indicate that the target is detected at a distance of about 50 kilometers and an altitude of 5200 meters. And these indicators are not limiting - if necessary, the detection range can be increased up to 75 kilometers.

From these documents it clearly follows that by the middle of 1934 the Soviet Union had not only well-established, well-developed ideas in the field of radar, but also factual material confirming the correctness of the operating principle.

This has to be said, especially since it is still widely believed that radar came to us from abroad.

If the Americans write that their first contract for the construction of six experimental stations was concluded in 1939, then in the Soviet Union the first contract with the plant for the construction of five experimental stations for electromagnetic detection of aircraft was concluded on October 26, 1934 (orders "Vega" and "Cone") - five years earlier than in the United States. Of course, these stations and these works were not yet as perfect as modern radar, but the fact remains, and it speaks for itself.

... Thus, the specialists of the Third Reich can, at best, take an honorable third place in their attempts to create installations that use electromagnetic waves to detect and destroy air targets. In the first place, of course, are our specialists, in the second place are the allies represented by the British and Americans. Moreover, the latter, quite likely, also used the help of their overseas colleagues.

Fuel from ... "nothing"

Everyone knows that during the Second World War, German chemists and industrialists set up the production of all kinds of ersatz products. In particular, it is to them that we owe the appearance and distribution of margarine. However, for some reason, few people pay attention to what efforts were made by the leaders of the Third Reich in order to learn how to synthesize liquid fuel literally from nothing. During the Great

Patriotic War, one could often see such a picture. The car stopped near the woodpile, and the driver began to fill the car with birch or aspen chocks. Of course, there was no firebox in the usual sense of the word in the car. Just next to the cabin, a high column of a chemical reactor was installed, and the wood was distilled into gaseous or liquid fuel.

Experts from the opposing countries were well aware that wood, also known as methyl alcohol or methanol, was first discovered in the products of dry distillation of wood as early as 1661. The French chemist M. Berthelot in 1857 obtained the first synthetic methanol by saponification of methyl chloride. At the time, that was the end of the matter. In practice, methanol was still obtained from the resinous waters of the dry distillation of wood. The first such plant was built in the USA in 1867, and by 1910 there were about 120 such plants.

Of course, Germany immediately became interested in the new method, which never had its own oil reserves, and of the minerals in abundance, perhaps, only lignite. And there are not so many forests. Therefore, German chemists tried to find methods for the synthesis of methanol from more affordable raw materials than wood. So, in 1923, the first methanol based on water gas (aka synthesis gas CO + H2) was obtained in Germany using a factory plant that produced up to 20 tons of methanol per day. And a year later, German industrialists began exporting synthetic methanol to the United States, where it was sold three times cheaper than that obtained from wood. At this time in Germany, methanol was sometimes even called "organic water" (organische Wasser).

During the Second World War, methanol was already used as a motor fuel for cars (albeit mixed with gasoline). With almost half the calorific value of gasoline, methanol has a higher octane number. The presence of oxygen in the methanol molecule ensures more complete combustion and a reduction in the volume of exhaust gases. They have less carbon monoxide, virtually no sulfur, and of course no lead.

But when working on methanol, an increase in the volume of fuel tanks is required. More heat needs to be fed into the intake system to vaporize the fuel, which means existing internal combustion engine systems need to be redesigned to run on methanol. The constant boiling point of methanol makes it difficult to start the engine at low temperatures, requires the use of special measures, for example, injection of a highly volatile liquid (ether) into the engine being started. Methanol destroys the layer of oil in fuel tanks, and the resulting lead hydroxide clogs fuel filters and carburetor jets. The corrosion of the engine and fuel system elements is also increasing, and parts made of magnesium, aluminum and their alloys are especially affected. In addition, in methanol

numerous gaskets and seals quickly swell and lose their tightness ...

In a word, the cars of those years were poorly adapted to run on methanol. And therefore, as soon as the opportunity arose, specialists began to use traditional gasoline and diesel fuel. However, the accumulated experience was not forgotten. To this day, designers, together with scientists, are discussing wider possibilities for using "vegetable fuel".

For example, practical Japanese want to use algae as a raw material for the production of motor fuel. The Norwegians consider the processing of coniferous wood promising for the same purpose - that part of it that usually goes to waste: sawdust, branches, the needles themselves ... In New Zealand, the first tons of fuel were obtained from orange peels, and in Mexico, successful experiments were carried out on the processing of cacti!

So, it turns out that, in principle, the motor can be powered by almost any organic raw materials. In Brazil, for example, even planes fly "on vegetable oil."

However, all this exoticism, as already mentioned, is not from a good life. In the same Brazil, there are practically no oil fields of its own, so you have to get out ... In such a situation, of course, the low calorific value of such fuel and its high price.

And in Germany during the Third Reich, synthetic gasoline had to be made from coal. There were even attempts to pour water into a car engine ...! Moreover, for this it was not decomposed into hydrogen and oxygen, spending large amounts of energy on this. No, they tried and are trying to add water to the engine without decomposition, so to speak, in natural condition.

Even at the dawn of motoring, it was noticed that in wet weather, engines seemed to work better. Studies have shown: yes, up to 10 percent of water can be added to motor fuel, and the engine will work.

However, according to some experts, under certain conditions, the engine can operate almost on clean water. Here is a story, for example, told by a reader from the city of Penza, E. F. Palatova. According to her data, in the United States during the First World War, tests were carried out on "fuel" for internal combustion engines, proposed by the Portuguese emigrant Juan Andres.

The main part of it was water (fresh or salty, it doesn't matter), to which an unknown liquid was added, which had a greenish tint. Cases were cited in the press when the inventor, in front of witnesses, prepared the initial mixture from medicines purchased at the nearest pharmacy. Mixing them in a bucket of water, he filled the fuel tank and started the engine. After adjusting the needle valve, the inventor achieved stable operation of the motor, which gave an exhaust without color and smell.

The tests were carried out on a Packard car and on a three-cylinder two-stroke marine engine. The consumption of the mixture was approximately 50 liters per 100 kilometers. Too much, of course, but do not forget - and the engines were taken quite powerful, and the fuel was fabulously cheap. Being an electrochemical

engineer by education, Palatova, together with her colleagues, tried to solve the emigrant's puzzle. "So, all piston engines work due to a high-pressure gaseous mass that enters the cylinder from the outside (compressed water vapor), or is formed inside the cylinder due to the combustion of liquid fuel," she reasoned. - In the first case, we are dealing with steam engines, in the second - with internal combustion engines. Both have their advantages and disadvantages."

The attractiveness of the steam engine is that the working fluid - water vapor - does not poison the environment. Naturally, the question arises: is it possible to create a high vapor pressure directly inside the cylinder? Andres answered in the affirmative: "Yes, if you use the energy of an explosive ... "

Indeed, in the explosion of even small amounts of explosives, large volumes of gases are formed and a lot of heat is released. The energy of the explosion and heat can bring water to a high-pressure gaseous state. "Obviously, Andres chose nitroglycerin as the explosive," writes Palatova. - I believe so, since in the form of a one percent alcohol solution, nitroglycerin can be bought at a pharmacy where it is sold

as a medicine that dilates the blood vessels."

In its pure form, nitroglycerin is a heavy oily liquid that solidifies at temperatures below 13 °C. It is poorly soluble in water: only 1.8 g per liter. But it is highly soluble in alcohol - up to 250 g per liter. When heated to 260 ° C and detonation explodes. Moreover, the explosion process instantly covers the entire mass of nitroglycerin, transferring all the molecules at once into a certain mixture of gases. As analysis

shows, the mixture of gases formed during the explosion contains 58 percent carbon dioxide, 20 percent water vapor, 18 percent nitrogen and 4 percent oxygen. All gases are absolutely non-toxic, they are natural components of the Earth's atmosphere.

> "I believe, in connection with the above, that Anres' fuel was an aqueous emulsion of nitroglycerin," Palatova ends her letter. - He prepared it by pouring a mixture of a pharmacy alcohol solution of nitroglycerin with an emulsifier into the water. Moreover, liquid potash ("green") soap, which is also sold in pharmacies, could serve as an emulsifier. This is how that greenish liquid was obtained, which Andres introduced into the water before pouring it into the fuel tank, having selected the quantitative ratio of all components experimentally and experimentally.

As you can see, Andres' puzzle turned out to be not so complicated. And if a person without special training solved it, then, probably, the German chemists, who have long enjoyed a high reputation throughout the world, even more so coped with this task. Moreover, before the war, as even a cursory search showed, there were many publications on this topic. Experiments were also carried out, the purpose of which was to find the optimal composition of the fuel and to gain practical experience in its use. However, these experiments were not destined to go beyond the range. Why? After all, Germany, as has been repeatedly said, was in dire need of replacing natural petroleum products with synthetic ones. There are several reasons for this. Let's

name at least the main ones. In principle, anything can be pushed into the engine, even naphthalene - similar experiments were carried out back in the 20s. The whole question is how profitable and rational it is?

Experience has shown that even if a small amount of water is added to the engine, this leads to a sharp deterioration in its performance and durability. In addition, nitroglycerin is a rather capricious, unsafe liquid to handle. It is no coincidence that the notorious Alfred Nobel spent a lot of time and effort before he was able to get dynamite - a fairly safe explosive to use. In general, no one has yet been awarded the Nobel Prize for the use of nitroglycerin mixtures as a fuel. And the same chemists of the Third Reich chose to go the other way - they began to receive synthetic gasoline, for example, from coal.

They had another way in stock. Oil, it turns out, can be extracted directly from ... the air! I must say that

the history of this recipe is also quite old. Back in 1908, the Russian chemist E. I. Orlov drew attention to the possibility of synthesizing petroleum hydrocarbons from carbon monoxide and hydrogen. This mixture is also called water gas (or synthesis gas) and is contained in sufficient quantities in the atmosphere. A few years after the

First World War, this method was tested in practice. Imperial Germany was cut off from natural sources of oil, and in 1922 the German scientists K. Fischer and A. Tropsch worked out the technology for producing synthetic liquid hydrocarbons in practice. True, at first they decided to receive water gas not from air, since it turned out to

be technically too difficult, but from brown coal. The synthesis of hydrocarbons was carried out by contacting this gas with iron-zinc catalysts at high temperature. In 1936, the first industrial installations were put into operation.

A total of 14 units were launched with a total capacity of about a million tons of fuel per year. They worked successfully until the end of World War II.

When post-war Germany gained access to cheap natural oil,

Gradually, all European and Asian synthetic fuel plants were shut down or converted to other products. But in South Africa, which was subjected to an oil embargo by the world community and where, moreover, coal mining is extremely cheap, in the mid-1980s, about 4 million tons of liquid hydrocarbons were produced annually. It is only today that the idea of obtaining fuel from the air, or rather, from the carbon dioxide contained

in it, seems to be gaining special urgency. A huge amount of fuel burned on the planet threatens the formation of the so-called "greenhouse effect". Due to the increased content of carbon dioxide in the atmosphere, part of the sun's rays, which should have been reflected from the surface of the planet and go back into outer space, is now delayed. And this, as some experts believe, can eventually lead to a general warming of the climate on Earth. At first glance, it's okay. Well, it will get warmer by a degree or two. What's wrong? But such a warming, as calculations show, can lead to the fact that a significant part of the current land will be

flooded. So scientists offer a way to turn evil into good. First of all, excess carbon dioxide must be isolated from the atmospheric air.

Already today's technology offers several ways to do this. Air components can be separated using porous membranes, frozen or combined under certain conditions with gaseous ammonia. Ammonia reacts with carbon dioxide to form ammonium carbonate. This white crystalline powder is easily separated from the gaseous components in a purely mechanical way - in apparatus such as cyclones or centrifugal separators. The air, no longer containing carbon dioxide, is returned to the atmosphere. Following this, ammonium carbonate easily decomposes when heated into carbon dioxide and ammonia. Ammonia is back in business, used to capture new portions of carbon dioxide.

The resulting carbon dioxide is decomposed into carbon monoxide (carbon monoxide) and oxygen. This reaction requires a lot of energy. Therefore, in all likelihood, it will be profitable to produce it only if cheap energy sources are available. Nuclear reactors or thermonuclear installations can become such sources. Here, at a temperature of about 5000 ° C in the presence of catalysts, carbon monoxide will be obtained. The released oxygen will again be sent to the atmosphere, and carbon monoxide will be combined with hydrogen. The resulting hydrocarbons can later be used in chemical production in much the same way as petroleum derivatives are used today.

Oklahoma-based Syntrolium, founded in 1978 by brothers Mark and Kenneth Agee, currently employs only 16 people. However, such giants of the oil empire as Shell, Exxon and Texica are urgently looking for contacts with the company. By the way, Syntrolium signed an agreement with the latter on the joint production of a product called syncrot at a price of $15 per barrel. Of course, it is a little expensive, but it is already clear that by further

improving the technology, the price can be significantly reduced, and then syncrot will become cheaper than natural oil. And this is very interesting, since the new name hides synthetic oil produced from natural gas. And its reserves in terms of this same syncrot are estimated at least twice as much as fossil oil.

American engineers took as a basis the same technology, the origins of which date back to the beginning of our

century. Syntrolium has improved this process. Now atmospheric air is used instead of oxygen to produce carbon monoxide, which has led to a significant reduction in the cost of the product. The pilot plant, which has been in operation since 1990, has a capacity of 2 barrels per day. But the technology for the production of 2,000 barrels per day has been developed and is being sold, and the preparation of documentation for the construction of a plant with a capacity of 5,000 barrels per day is nearing completion. The company is convinced that the

future belongs to such relatively small, compact units that can be installed in close proximity to the consumer and get fuel almost out of thin air.

The great advantage of syncrot is the fact that it does not contain sulfur and aromatic compounds, which are difficult to get rid of when working with natural oil. In addition, as recent studies have shown,

there is actually much more natural gas on Earth than standard estimates give. After all, they do not take into account the reserves of the so-called solid gas. And many geologists seriously believe that the bottom of the World Ocean is underlain by hydrocarbon gas hydrates - compounds in which methane molecules fill voids in the lattice of crystalline ice. The thickness of the deposits reaches half a kilometer, which, you see, is quite a lot, given the area of the World Ocean.

Only in the North Atlantic, where the group of Dr. J. Bickens from the University of Michigan worked, it turned out that up to 35 billion tons of methane is located on a relatively small area of the ice bottom. In addition, it also contains up to 7 percent carbon - so there is all the necessary raw materials (plus atmospheric air) for the production of synthetic oil. In general, it turns out that the Nazi

chemists did not bring the work they started to its logical end. Perhaps because they did not really want to help the ruling regime? One way or another, they also missed another chance to prolong the agony of the Third Reich.

Please note that residents of Europe, including large cities and our country, have already become accustomed to trucks with red gas cylinders instead of gas tanks. There were also the first "Volga"-taxi, running on gas. And as experience shows, natural gas may well compete with traditional gasoline and diesel fuel. The gas has a higher octane rating, it pollutes the air less with toxic gases when burned in the engine cylinders, does not spoil the lubricating oil ...

All this, by the way, has been known for a long time. At the Paris exhibition in 1878, N. Otto and E. Langen demonstrated a gas car in action. True, he stunned those around him with a desperate crack, but he consumed relatively little fuel.

So in this case, the new is the well-forgotten old. And is it any wonder that by now only in our country half a million cars run on natural gas? Rather, it is worth wondering about something else - why are there still so few of them? .. Biogas can also be used as a fuel. The source for its production is waste, in large quantities - up to 500 million tons per year! - formed on livestock farms, poultry farms, and even just in the fields of the country.

The production of biogas is quite simple. Organic waste is loaded into a special tank - a digester, a little water and a special anaerobic sourdough are added. Now you just need to maintain positive temperature in the digester. The bacteria will do everything else themselves: they will carry out the necessary fermentation process, process waste into biogas and sludge. Biogas, as analysis shows, consists of 50-70 percent of ordinary methane, and the sludge is an excellent organic fertilizer. In itself, such an unpretentious technology, of

course, does not represent anything fundamentally new. Some scientists believe that approximately the same processes of transformation of organic substances into methane occur in the bowels of the Earth. According to economists, in the next 20-25

years in the Soviet Union, using already developed technologies, it is possible to produce annually 15-18 billion cubic meters of useful gas. The potential is even higher. Indeed, in each industrialized country, as the calculation shows, there are about two tons of organic waste per person per year, which corresponds to the possibility of obtaining 1000 cubic meters of biogas. For reference, we add that at present, an urban dweller annually spends 100 cubic meters of domestic gas on cooking, which is equivalent to 150 cubic meters of biogas. Thus, almost the entire population can be provided with gas!

And that is not all. The very process of obtaining biogas, according to experts, is fraught with many reserves. In particular, the fermentation process can be accelerated. For example, if part of the biomass fermented in the methane tank is removed from it and mixed with raw materials newly supplied through pipes, the decomposition of organic substances will begin even before they enter the

digester. This makes it possible to reduce the main cycle from five days to one. And if microbiologists bring out highly active species of microorganisms, then the entire reaction cycle can probably be brought up to several hours.

Biogas can be obtained not only from waste, but also from plantations specially designed for this purpose. And in order not to occupy useful areas on land, it is logical to place such plantations in the sea. Scientists believe that

the estuaries of the Black Sea, the Caspian and Aral Seas and other water bodies of our country are suitable for industrial plantations of such energy biomass. With a plant yield of 20 grams per square meter of water surface per day, during the summer growing season, up to 24 tons of biomass can be collected from one hectare. Its processing in digesters will produce 12,000 cubic meters of gas. Such studies are actively carried out under the Biosolar program.

Imagine a narrow pool above which huge lamps shine dazzlingly. Submerged plastic troughs float on the surface of the water. In them, the water is noticeably darker and seems to be thicker than around. In any case, this is the impression, although, according to the head of the laboratory accompanying us, the water is the most ordinary - from the water pipe, only with the addition of nutrient salts.

But then he bent down and, holding on to the handrail, scooped up a test tube from the trough. To the eye, the greenish contents of the test tube seemed completely homogeneous. Only under a microscope was it possible to see that the water is teeming with tiny organisms.

These unicellular algae are the main "mechanism" of the installation. It is they who consume the nutrients contained in the substrate and multiply rapidly under bright light. From time to time, the “broth” from the troughs is thinned, pumping out the excess into the digester already familiar to us. Fermentation reactions are taking place here, and here, please, biogas begins to come out of a metal cylinder.

The laboratory calculated that if we cover the surface of the Aral Sea with such troughs, or, as they are called here, photosynthetic blocks, we can provide our entire country with fuel that will provide heat and electricity for all needs. Fiction? .. For now - yes. But fiction based on precise calculation. Researchers show a map of the globe, where the most advantageous places for creating such plantations are marked. It is estimated that they can harvest more than 300 billion tons of standard fuel per year. This is about 15 times more than what humanity will need in the year 2000! Finally, bacteria can also be used to improve the efficiency of conventional oilfields. We already know that with current methods

of extraction, a significant part of the oil remains in the bowels of the earth. But if invisible workers are launched into an exhausted well, they will very quickly convert the remaining oil into biogas, and old fields will gain new life.

Gold for the party

Perhaps, about him, this diabolical metal, and it would not be worth talking about separately. As you will see for yourself from what follows, the topic seems to be somewhat beyond the scope of this book. And still…

> “I am writing to you about this. We got into an argument here. One of my classmates read that the Nazi gold, which was recently found in Swiss banks, was mainly obtained as a result of the melting down of dental crowns, bridges seized from concentration camp prisoners, and gold jewelry taken from the population of occupied countries. Another began to object to him: why, they say, did the Germans need it? A cultured, highly developed nation, excellent chemists… Back in the 1920s, they learned how to extract gold from sea water, or even simply recycle wastewater. That is why they managed to restore their economy so quickly both after the First World War and after the Second. It's just us, felt boots, still continue to mine gold in the old fashioned way - from gold-bearing sands and rocks ... "

Well, then in the reader's letter followed the on-duty request to answer which of the two rights disputers.

I read this message and thought: after all, human memory is short. The last surviving prisoners of those terrible camps are still walking on the earth, and the younger generation is already arguing whether it happened or not ... Well, let's try to trace at least partially the history Nazi gold.

Associate Professor of the Tambov Institute of Chemical Engineering Evgeny Kapitonov somehow told such a story. On June 28,

1919, the Versailles Treaty was signed, by which Germany undertook to pay reparations to the winners. In May 1921, at the London Conference, the total amount was set at 132 billion gold marks. This amount was outrageous. It corresponded to 50,000 tons of gold, which at that time amounted to almost two thirds of the entire world supply of this metal. Where can you get so many?

And then the famous German physical chemist Fritz Haber hurried to the rescue of his homeland. He was a peculiar phenomenon in German science. A man who would later be said to have saved millions of people from starvation and doomed hundreds of thousands of them to death by suffocation. The specialist who received the Nobel Prize for developing an industrial method for the synthesis of ammonia, which is necessary for the production of mineral fertilizers, without hesitation organized the production of poisonous gases for military purposes, for which, in fact, he was included in the number of 895 major war criminals who sinned against the laws and rules of war , international customs and the sanctity of the treaties concluded between 1914 and 1918. Nevertheless, Fritz Haber considered himself a "good German" and regarded Germany's assistance in paying reparations as an extremely important task both for German science and for himself personally.

Gaber thought about the gift that, according to ancient myth, the god Dionysus awarded King Midas. Having learned to convert the nitrogen of the air into ammonia, the chemist himself, to a certain extent, received such a gift. But what triumph could he expect if he discovered a new source of gold that would satisfy the gold thirst of the victors and restore the fatherland to its former power and dignity.

In the Middle Ages in Germany, native gold was mined from sandy deposits in streams. Later, gold diggers were attracted by the rivers of California and Alaska, Siberia and Australia. But where do the gold-bearing flows of these rivers go? To the oceans! The scientist knew the work devoted to the study of the gold content in ocean water. If we consider the most reliable data of the authoritative Swedish scientist Svante Arrhenius, who believed that a ton of water contains about 6 milligrams of gold, then there should be ... 8 billion tons of precious metal in the oceans. What does it mean to take only 50,000 tons from it - no one will notice it?

Here we must suspend our narration for the time being in order to restore justice. Haber was not the first to think about the possibility of extracting gold from sea water.

In 1872, an article by E. Sonstadt appeared in one of the English chemical journals, in which the author reported that he had taken a water sample in the shallow Ramsey Bay off the northeastern coast of the Isle of Man in the Irish Sea. The analysis found gold at a rate of less than 67 milligrams per tonne of water. When such a “bumpy” figure is encountered, it is easy to think that the exact value does not differ much from it - less than one. That is how Sonstadt's message was understood, and his article created a sensation among chemists, geologists, and oceanologists. In order to understand the essence of the sensation, it is enough to recall that the richest

South African gold ores contain only 10 grams of gold per ton of ore.

The extraction of gold from river sand by dredging is economically justified already at a content of 150 milligrams of gold per ton of sand. At the same time, hydrometallurgical processing of sand requires a lot of labor and time. In sea water, gold, as chemists assumed, is in a dissolved state - in the form of salts of

chloroauric acid. In this case, his prey becomes

economically justified even with a content of only a few milligrams per ton of water. Thus, Sonstadt's data spoke of the possibility of using practically
inexhaustible source of gold.

It was only necessary to find an effective way to extract it from sea water and check the actual gold content in different places of the World Ocean.

Work in these two directions began to develop very rapidly. For half a century, about 30 different methods for extracting gold from sea water have been created, for which a total of 49 patents have been issued in different countries of Europe and in the USA. Some inventors were so sure of the effectiveness of the methods they developed that they hurried to patent them in all the leading countries of the West. So, O. Nagel received 15 patents in Germany, France, England, Austria, Norway, the Netherlands and Denmark, and on January 30, 1916, he registered four applications simultaneously in three countries. The thirst for gold was so great that the

copper sheathing of the bottoms of ships and piles of moorings almost became a victim of it. The fact is that copper is able to displace gold from its salts. In this case, it can be expected that the gold displaced from the solution will settle on the copper plating. In 1896, Liversidge published an article in which he reported that studies had confirmed the presence of gold on copper sheathing sheets, but extracting it from copper was completely unprofitable.

A number of publications have also appeared on the content of gold in sea water. X. Munster examined the water from Christiania Fjord in 1892 and found in it 5–6 milligrams of gold per ton. Pak, when examining water taken off the coast of California, found 30 milligrams, Don - 4.5 milligrams, Wagoner - 11-16 milligrams. Koch, who studied the waters of the Mediterranean, gives a figure of 1.5 milligrams. Liversidge in the study of samples taken off the coast of Australia, received a value of 30-60 milligrams. The data obtained in different places of the World Ocean were very encouraging. True, in Germany at the same time a small book was published for

reading on inorganic chemistry for students, which said that a ton of ocean water contains only about 0.2 milligrams of gold, but the researchers, intoxicated with hope, paid no attention to this. In the same way, the reports of scientists who found only fractions of a milligram of gold in a ton of water were received with great restraint.

20 years after the appearance of his first article, B. Zonshtadt again made a short note in which he objected to a false understanding of the gold content he had named earlier. He wrote that he again took a barrel of water off the east coast of England in the Lowestoft region as a sample and found that the gold content in it was not only less than 67 milligrams, but much less. But this note did not attract anyone's attention. And what kind of trust in her could we talk about if the size of the sample for microchemical research was measured by a barrel of unknown volume, and the amount of gold found in it was said only that it was much less than 67 milligrams?

Thus, in the half century after Sonstadt's first publication, quite a lot of hopeful information about the gold content in sea water and ideas on how to extract it has appeared. Only the gold itself was missing. And the fact was that all methods of extracting

it were developed on artificial sea water, which was prepared by dissolving the required amount of salts in distilled water with the addition of gold in an amount corresponding to the publications mentioned above. Of course, this liquid was very different from real sea water with its microorganisms, silt, etc. In addition, the outbreak of the First World War prevented the further development of research.

When the war ended, Haber made his proposal. On a frosty January day in 1922, he gathered a dozen young employees in his personal laboratory and gave them a fascinating lecture on the economic significance of modern oceanology and on the possible prospect of extracting gold from the ocean. The audience was enthusiastic about

this idea. Already in early February, preparatory work began to boil in the newly organized department of the institute with the mysterious designation "department M". First, all existing methods were tested,

designed to extract gold from water.

After many experiments, the extraction method improved by the employees of department M was chosen with filtering the precipitate through a sand filter. Haber's method was gradually brought to such a degree of perfection that it made it possible to detect even billionths of a gram of precious metal.

For water processing, it was necessary to create special ships with powerful pumping units. Consultations with specialists from the Vulkan shipyard made it possible to establish that the construction and operation of such vessels would be economically justified if 1 cubic meter of water contains at least 1–2 milligrams of gold. Thus, the results of shipbuilders' calculations were encouraging. The next step was the organization of marine research. Haber wanted

to take samples on the high seas, away from the coast, where there are fewer impurities that interfere with accurate analysis. The problem was not easy, since during the war Germany lost 90 percent of its merchant fleet and lost the right to enter the Atlantic Ocean. True, in June 1920, cartel ties were established between German shipping companies and the Harriman

company in the United States, which led to the revival of German shipbuilding and shipping. For two years, the Hindenburg, Ludendorff, Tirpitz, Karl Legin and others were built to serve the Hamburg-America line. Nevertheless, the assistance of the Minister of Foreign Affairs Rathenau was needed in order to equip a chemical laboratory during the summer voyages of 1922 in one of the cabins of the Hansa steamer and get places on the ship for five of her employees. The expedition was financed by the metal bank and the German gold and silver distribution office in Frankfurt am Main.

Gaber and his assistants were enthusiastic. They were captivated by the magnitude of the task they had taken - to extract 50,000 tons of gold, while its annual production throughout the world in the first quarter of the 20th century never exceeded 708 tons.

The walls of the laboratory were occupied by racks, on which stood two-liter jars with special hermetic lids. These jars were made of glass, completely cleared of the slightest trace of gold, so that they would not distort the experimental data. Thousands of water samples were taken both from the surface and from various depths in different parts of the North Atlantic. But only two of them contained an average of 8.5 milligrams of gold. In other samples, its content was measured as a number with two or three zeros after zero integers. And the more accurate the analysis methods became, the lower the gold content they showed. But perhaps the North Atlantic contains less gold than other areas of the World Ocean? Or were all predecessors, including Arrhenius, wrong? A study of the Gulf Stream water on the way to New York gave five zeros after the decimal point. When the

Hansa returned to its native shores, Haber was increasingly tormented by the question:

“Should he give up his swim altogether?” But soon he was already on board the Württemberg again engaged in sampling in the South Atlantic. The result is the same. In the summer of 1924, the Danish research vessels Dana and Gothaab assigned to Copenhagen set off for Iceland and the coast of eastern Greenland. Under the guidance of Professor M. Knudsen, samples of water and polar ice were taken for Haber there. When studying them, an unexpected discovery was made - the polar ice contained ten times more gold than unfrozen sea water (up to 0.047 milligrams per ton). But even this concentration was too low for industrial processing. Nothing encouraging was given by the Danish expedition of Professor Crass, who in January 1925 began systematic studies of the Gulf of La Plata.

At the beginning of May 1925, the Meteor measuring vessel set off for the South Atlantic to carry out comprehensive oceanographic research from the Antarctic to the Arctic Circle, in accordance with the plan of Dr. Mertz, who led the expedition. On board the ship were scientists of many professions. At the last moment, Dr. Quasebart, an employee of Department M, was included in the expedition. Today, some experts tend to consider the search for gold in the sea almost the

main task of the Meteor. For example, G. Dubach and R. Taber in their book “One Hundred Questions about

ocean" write: "One of the main goals of the numerous expeditions of the Meteor ship, which repeatedly plowed the North and South Atlantic from 1924 to 1928, was to study the possibility of separating gold from sea water." However, the results of the expedition's work in terms of

searching for water with a sufficiently large
gold concentrations were also completely negative.

In 1925, Haber makes another attempt to find gold. After all, it is in the sea
carried out by the rivers. Perhaps, in the gold-bearing rivers, the water contains quite a lot of it?

The Rhine was a gold-bearing river. One hundred years before the events described in the Grand Duchy Baden minted coins from gold mined in its deposits.

Haber carefully examined samples of Rhine water taken in the Karlsruhe and Leverkusen area. And here two surprises awaited him at once. First, there was very little gold. A thousand cubic meters of water per second is carried by the Rhine into the Atlantic Ocean. But only 200 kilograms of gold a year carry its waves. Secondly, it was found that the little amount of precious metal that the waters of the Rhine carry is not only contained in bottom sediments and silt, but also floats in the water. Looks like there are bits of gold in there.

crushed to ash.

But why did so many researchers publish such encouraging data? Haber made a rather logical assumption on this matter. The researchers, when determining the gold content in water, took into account the possibility of losing some of the gold due to its incomplete precipitation during the analysis. But they did not take into account that, when dealing with only hundredths of a milligram of this metal in a ton of water, it is also necessary to take into account the possibility of taking a small amount of gold into the sample with the reagents used, in which it serves as an accidental impurity, with a tool or laboratory glassware.

In 1927, F. Gaber published an article in which he summed up all the work on the search for gold in the ocean. “It is possible that one day they will find somewhere in the ocean where particles of the noble metal are concentrated. I gave up on this dubious search for a pin in a haystack.”

The disappointment that befell Haber and his colleagues turned out to be so strong that for several decades they did not attempt to answer the questions that remained “behind the scenes”. Why, for example, does the polar ice contain ten times more gold than the surrounding water? Where did the gold from the Rhine go? And where, finally, did E. Zonstadt get the number 67 milligrams, which gave rise to so many hopes and disappointments?

Instead, the Nazis found their own and, as it seemed to them, a very promising source
receipts of gold in the Third Reich.

All thirty-odd major Nazi concentration camps were essentially death factories, where millions of prisoners died from torture and starvation. How many unfortunate, innocent

people, mostly Jews, as well as Russian prisoners of war, were destroyed in Auschwitz alone! The total number cannot be determined. Hess, whom we mentioned, in his testimony gave a figure of the order of "2 million 500 thousand shot, suffocated with gas and burned, and at least 0.5 million died from starvation and disease, which in total is about 3 million people." Later, during his trial in Warsaw, he reduced this figure to 1 million 135 thousand people. The Soviet government, which conducted a thorough investigation of the atrocities at Auschwitz after it was taken over by the Red Army in January 1945, cites a figure of 4 million people. Reitlinger, based on his own careful calculations, casts doubt on even the figure of 0.75 million exterminated in the gas chambers. According to him, 600,000 people died in the gas chambers, to which an "unspecified part of the missing" is added, about 300,000 people who either were shot or died of starvation and disease. By any estimate, this is a very impressive number.

The corpses were burned, but the gold crowns on the teeth were preserved and, as a rule, removed from the ashes if they were not appropriated by the soldiers of special units who sorted through the mountains of corpses. The gold was melted down into bullion and, together with other valuables taken from the doomed Jews, was sent to the Reichsbank in accordance with a secret agreement between

Himmler and the president of the bank and entered into the account of the SS under the code "Max Heiliger". In addition to gold torn from their teeth, gold watches, earrings, bracelets, rings, necklaces and even eyeglass frames came from the death camps, since Jews were recommended to take all valuables with them “when moving to a new place of residence”. Large stockpiles of jewelry were also amassed, especially diamonds and silverware, not to mention thick bundles of banknotes.

The Reichsbank was literally overwhelmed with receipts to the account under the code "Max Heiliger". The cellars of the Reichsbank were filled with “trophies” as early as 1942, and its greedy directors began to look for opportunities to pawn them in municipal pawnshops in order to get cash for them. One of the letters from the Reichsbank to the Berlin municipal pawnshop, dated 15 September, mentions a "second batch of receipts." It begins like this: "We are sending you the following values, asking you to put them to good use." The following is a long list of valuables by type, which includes: 154 pairs of gold watches, 1601 pairs of gold earrings, 132 diamond rings, 784 pairs of silver pocket watches, and 160 various dentures, partly made of gold. By the beginning of 1944, the Berlin pawnshop was overwhelmed with stolen goods arriving in a continuous stream and therefore informed the Reichsbank that it was no longer able to accept valuables. When the Allies defeated Germany, they found in some abandoned salt mines, where the Nazis hid some of their documents, and "trophies", including those stored on the account under the code name "Max Heiliger". Their number made it possible to fill three large safes in the Frankfurt branch of the Reichsbank. Did the bankers know about the sources of these unique deposits? The Director of the Reichsbank Precious

Metals Department testified at Nuremberg that both he and his employees noticed that many shipments of gold came from Lublin and Auschwitz.

> “We all knew that these were concentration camp sites. Only in the tenth batch, which arrived in November 1943, did gold appear for the first time, removed from the teeth. The amount of such gold became unusually large.

Sometimes crowns were torn off before people were finished off. From a secret report by the head of the Minsk prison, it turned out that after he resorted to the services of a Jewish dentist, “golden bridges, crowns and fillings were removed or torn out from all Jews. This usually happened an hour or two before the special action. The head of the prison noted that out of 516 German and Russian Jews executed in his prison during a month and a half in the spring of 1943, 336 had their gold crowns removed, etc.

At the Nuremberg trials, the notorious Oswald Pohl, head of the economic department of the SS, who conducted business operations for his department, emphasized that Dr. Funk, as well as employees and directors of the Reichsbank, knew perfectly well the origin of the things they tried to pawn in a pawnshop in order to get money for them. He described in some detail "a business deal between Funk and the SS regarding the delivery to the Reichsbank of valuables belonging to dead Jews." He recalled a conversation with the vice-president of the bank, Dr. Emil Pohl.

> “After this conversation, there was no doubt that the items that were received by the Reichsbank or that were supposed to be transferred to the Reichsbank belonged to Jews killed in concentration camps. Such items were rings, watches, glasses, gold bars, wedding rings, brooches, pins, gold crowns and other valuables.”

So, the Nazis found their deposits and mines, organized their own gold mining enterprises. And they were the losers. And not only because the war was lost and in Nuremberg all the subtleties of the “technology” developed by them surfaced into the light of day. It turns out that if the German experts did not believe Haber, if they still used their brains, they would still have a fundamental opportunity to get gold from non-traditional,

but natural sources. The

attempt of other researchers - already after the end of the Second World War - to understand this problem led to new discoveries. It turned out that gold is not as rare as one would expect, based on its name - a rare metal! In nature, it is native in the form of microscopic inclusions in igneous rocks, quartz, slates, etc. The weathering of such gold-bearing rocks gives placers containing gold sand, and sometimes large nuggets - they were found up to 285 and even weighing 1350 kilograms! In general, in the entire history of civilization, more than 50 thousand tons of gold have been mined, that is, an average of 10 tons per year. According to geochemists, the total amount of gold in the lithosphere (the earth's crust up to 16 kilometers deep) is about 100 billion tons. So, the complete exhaustion of gold-bearing rocks is still far away, although some mines are being depleted (this happened with the Rhine ones).

But there are some interesting problems here. Along with the constant discoveries of new deposits of the precious metal, the areas of its application are also growing. In addition

to traditional use in jewelry, metallic gold and its alloys are used for the manufacture of laboratory instruments, apparatus parts, as well as for coating various objects made of glass, porcelain or metals, in microelectronics, dentistry, catalysis (synthesis of water from elements (!), thermal decomposition of organometallic compounds, etc.), photographs, etc., etc.

One way or another, in all these processes, gold comes into contact with water or solutions, dissolves in water and is carried away by water. Thus, the more gold is mined and used, the more significant part of it is carried away by rivers into the oceans.

And further. Analyzing the main gold deposits, it is easy to conclude that the vast majority of them are located along river valleys. Why? Yes, because the rivers are constantly washing out, as if “sifting” microscopic particles of gold (mechanical suspensions and chemical compounds) from gold-bearing rocks. Washed up and carried into the ocean. After all, not everything can be obtained. To this should be added the migration of gold with organic compounds in the biosphere. The conclusion from all these data suggests itself: indeed, for

centuries the oceans had to accumulate gold! What does modern geochemistry say about the amount of precious metals in sea water?

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According to the Soviet academician A. Vinogradov (1967), the average chemical composition of ocean water contains 4x10–10 weight percent gold (0.000004 grams per ton in the form of anion 18). In the lithosphere, gold is contained in an average amount of 4.3x10–8 weight percent, that is, only 1000 times more than in the ocean! But a gold-bearing vein (similar

to the "reefs" of the Transvaal, where the concentration of gold is 12-18 grams per ton) still needs to be found, and sea water - here it is, take as much as you want, at least all 5 million tons of gold contained in it. And why only gold? Almost all the elements of the periodic table of D. Mendeleev are dissolved in sea water, and only 16 of them (not counting those for which there are no data), and the most rare, in smaller quantities,

than gold.

It turns out that it is necessary urgently and on a wide front to develop gold mining from the oceans? Indeed, since the time of F. Gaber, such work has practically not been carried

out. Maybe someday all this will become a reality, but first it is necessary to resolve a number of important issues. For example, how to sorb gold from water? Excellent prospects promise ion-exchange resins, or, as they are often called, ion exchangers. These wonderful synthetic substances are able to exchange their active ions (or rather, counterions) for any ions

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18 A&Cl2

of equal sign, which are in solution, including, of course, gold ions, which are then easily reduced to metal. Already existing ion exchangers allow sorbing gold in the amount of 200 percent and silver in the amount of 300 percent of the weight of the resin itself!

Soviet scientists A. Davankov and V. Laufer developed an industrial installation for extraction of gold (over 90 percent yield) from the wastewater of large jewelry factories.

However, the World Ocean cannot be poured from one barrel to another, passing through a column with ion exchanger? Here, apparently, other, even more advanced technological solutions will be needed. And

they are already on the

way ... Here is at least one of them. Researchers have long noticed that living beings - inhabitants of the seas and oceans - tend to accumulate certain substances in their bodies. For example, an oyster is a real storehouse of copper, holothurians and ascias accumulate vanadium, lobsters and mussels - cobalt ... But some types of plankton, diatoms and a number of other microorganisms prefer gold. So why not rely on natural prospectors?.. » The first experiments are encouraging. Researchers

have found microorganisms whose shells are almost entirely composed of a noble metal. Of course, from the laboratory to industrial production - the road is quite long. But perhaps it will be possible to reduce it in the light of the latest scientific discoveries made by American scientists.

They managed to record the rarest natural phenomenon with the help of hydrophones, which were previously used in the tracking system for Soviet nuclear submarines. Some scientists believe that bottom activity is a kind of "heartbeat" of the planet. The discovered process affects the chemical composition of sea water, the deposition of valuable metals, including gold.

We are talking about a certain substance, similar to volcanic lava, slowly flowing out of the bowels of the planet and spreading along the ocean floor. But all this happens in the darkness of the dead of night, in an underwater kingdom inaccessible to the eye, over which the murderous pressure of many ton-kilometers reigns. That is why these processes are little studied and seem to us mysterious.

Nevertheless, such attempts are being made. Recently, scientists went on the 50-meter MacArthur research vessel to the area of observed volcanic activity and lowered sensitive detectors into the water. With their help, they managed not only to take samples of the liquid erupted from the cleft, which, as it turned out, was very abundant in bacteria and microbes, but also saturated with various salts. At the University of Washington in Seattle, scientists are

trying to learn as much as they can about exotic organisms that thrive in boiling water temperatures. “This is the latest frontier in microbiology,” said John Barr, a biologist who has taken on the study of heat-tolerant microorganisms. The only time something similar in the past, scientists managed to fix in June 1993. Then

another cleft in the region, Juan Defuc Rich, shuddered from internal tremors. Again, this became known from the message of the US Navy, in turn, received from a network of hydrophones encircling the coast of the country. Then scientists came to the conclusion that the heat rising from the bottom bowels gives rise to a generous ecosystem, including not only a huge number of heat-loving microbes, but also colonies of tube worms and other bizarre creatures that inhabit depths where sunlight does not penetrate.

Cracks between tectonic plates on the ocean floor, especially the Gordo Reach cleft, became the talk of the town in the 1980s, when they were fringed with deposits of gold and other valuable metals. This discovery helped President R. Reagan in those years to accelerate the adoption of a law to expand the US borders to a 230-mile zone of the ocean.

Secret fairways

So, analyzing the achievements of the leaders of the Third Reich, as a rule, one has to

to state that the Fuhrer and his henchmen were never able to really use the scientific and technical potential that was at their fingertips. Partly due to illiteracy, partly because of the disorder, which, it turns out, they had no less than ours.

So, perhaps, in the navy, in particular at submarine bases,
which the Fuhrer was so proud of, were things going better?

Let's turn to world authorities: there is no doubt that Alexander Lippish, one of the few aerodynamic scientists who was interested in the so-called ekranoplans not only from the standpoint of “pure” science, managed to far outrun everyone.

However, according to Lippish, he was not the founder of this area of science and technology: “Since 1921, the theory of Wieselsberger, who was at that time an assistant to Professor Prandtl in Göttingen, has been known. He was the first to develop the theory of the influence of the screen on the underlying surface. True, it was calculated according to the biplane theory. The scientist was primarily interested in the behavior of the aircraft

during takeoff and landing. The ekranoplan - a kind of hybrid of a torpedo boat and a seaplane - flies much lower, some 20-40 centimeters from the water. In this case, the mass of air supporting the ekranoplan boat consists, as it were, of two parts: one is the retarded flow under the wing; the other - rather insignificant - comes out from under the wing in the region of the trailing edge and is constantly replenished with air coming from above, from the wing toe.

However, the main mass of air remains under the bearing surface and creates a pressure there that is almost equal to the dynamic pressure. It plays the role of a kind of air skating rink, on which the ekranoplan boat “rolls” like clockwork. In

the 1930s, Finnish engineer Kaario developed a simple rectangular wing sled that glided over the snow using a screen. The inventor received a patent that no one seems to have read - how many of us know Finnish? Nevertheless, Lippisch is

disingenuous: he himself is well aware of that patent. He probably also knew about the work of our compatriot V. I. Levkov, who conducted similar experiments in 1935 on the territory of the USSR. Yes, and he himself spent a lot of time doing calculations and in the laboratory to understand: the idea here is rich.

So why didn't he ring all the bells? Why didn't he call the Fuhrer about another version of a miracle weapon capable of delivering bombs and torpedoes to the coast of England at the speed of an airplane and at the same time practically undetectable by British radar?

There may be several reasons for this. Firstly, as far as is known, the scientist did not like the Nazis and never had such relations with the Führer as, for example, Ferdinand Porsche already known to us. Secondly, he believed that ekranolety is unlikely to outshine the aircraft, including his famous "tailless". One way or another, A. Lippisch

built his first ekranolet only for the Americans.

> “In 1959, my boss, the owner and head of the well-known Collins company, asked me to build a large boat on which to test electronic equipment for the US Navy,” the designer himself said. - Collins wanted all the details of the ship to be made of artificial materials - metal interferes with radio equipment.
>
> For experiments, we built a beautiful hydrochannel 30 meters long, equipped it with windows for photography and filming. The models helped explore every conceivable boat shape, even swept-back glide surfaces. After many experiments and reflections, I "sculpted" the lower surface of the boat - these were the contours of the future ekranoplan. The boat was made, and Collins and I rode it on one of our lakes. The boat was picking up speed very well, we began to admire its
>
> agility, when suddenly the bow part separated from the water and threateningly lifted up. What to hide, we were afraid - the center of gravity of the boat was in the back of it, so not for long before the acrobatic somersault ... Now I knew everything I wanted to know. Having handed over to the electronics
>
> engineers another, completely normal boat, he continued to work on his own - the shrew. If you leave the bottom as it is, put a curved wing on the boat, I reasoned, everything will be in

okay. But you need to somehow maintain stability when the ship rises above the water. So, you can not do without the tail, like an aircraft.

Together with my sons, I made several balsa models with micromotors. We drove them on the snow cover, and then in the hydrochannel. The aerodynamic quality of the models (the ratio of lift to drag force) reached 40 - a characteristic of a good glider! Later we built the first boat, the X-112 ekranoplan. Here we learned that

the influence of the screen on the takeoff and landing of

aircraft was also studied in Japan and Russia. After Kaario's report to the United States in 1959, experiments with boats were carried out by Lockheed and Boeing. True, not very successful ones - the boats lost their stability and capsized - the same thing happened to them as with our first boat. Firms chickened out, and we went further. The biggest problem was... the engine. There was simply not enough money for a new one, and the old one, bought on occasion, turned out to be too weak. We decided at first to do without a motor. They took a speedboat - it was

towing our X-112. The ekranoplan boat safely broke away from the water and glided on an air cushion.

By the tension of the rope, it was possible to determine the force of the frontal resistance of the apparatus. Aerodynamic quality turned out to be unexpectedly high - 20-25. With the engine, the ekranoplan easily drove two. I usually sat behind the pilot.

After the successful flights of the Kh-112, I built the Kh-113. Only already at the expense of other organizations. Collins, an electronics company, didn't need our experiments. Interested in the work in the Federal Republic of Germany, where in 1965 I made a report on experiments with an ekranoplan boat. The X-113 was built by the Rhine-Flügzeigbau. For the power plant, we chose the American "Nelson" of 40 horsepower. The

car was also tested in Germany, on Lake Bodensee. X-113 is very stable in flight. Feel free to drop the pen. Management is so simple that it is available to any pilot after some instructions of a purely theoretical nature.

It turned out that the X-113 can fly even higher, outside the influence of the screen. The pilot climbed up to 800 meters. And although the ekranoplan cannot be called an airplane, it has many of the advantages of this machine. After all, it can fly from one lake to another, overcome obstacles and land in the lake areas. And yet the main mode for the ekranoplan is flight in the zone of influence of the screen. In this case, it turns into a highly economical high-speed vehicle, costing a low-power engine.

It seems that the inventor himself did not regret at all that he had not built such a boat before the war. And meanwhile, if he had done this, perhaps a similar picture could have been seen much earlier. ... To an outside observer,

this ship swaying on a lazy wave seems like a curiosity. Or the product of the designer's morbid imagination. A long, swift body, looking like the fuselage of an airliner, turning into a "dolphin nose" of the cockpit, the windshields of which are frighteningly like slanted eyes. Turbojet engines. Aircraft keel - tail.

When this colossus is towed into clear water, the engines will roar deafeningly and the narrow predatory body will rush forward in a cloud of spray. Having gained speed, the car will slip out of the water and, at the speed of a fighter, will rush at a height of several meters above the sea swell.

This is a miracle of technology, nicknamed in the West the "Caspian monster", crowned the efforts of many designers and scientists. Robert Bartini, an Italian who became a Soviet aircraft designer, but never became his own for our authorities, thought about ekranoplanes. Levkov, already mentioned by us, and the most talented Pavel Grokhovsky, who was put against the wall by the Chekists in the same 1930s, worked on them ... As a result, “monsters” did not

appear in the 1940s, but only in the 1970s and 1980s. However, maybe this is for the best.

After all, ekranoplans are not afraid of any storms. They are not afraid of ice - they fly over them. They are not threatened by swampy estuaries and coastal stones, on which they can break

ordinary ships. As well as shallow. They are capable of landing troops everywhere - from the African Skeleton Coast with its devilish reefs, to both coasts of the United States, the Arctic lands of Canada and Alaska. The ekranoplan is not

threatened by mines lurking under the surface of the waters and on the shallows. It is inaccessible to torpedoes from submarines. But he himself, having a speed of 300-400 miles per hour, will overtake and destroy even the fastest submarine with depth charges. The ekranoplan can carry anti-ship missiles and mines, striking enemy squadrons. An apparatus was designed that could already transfer a whole battalion of marines with all the equipment and weapons over several thousand kilometers at a speed of 600 kilometers per hour.

Can you imagine how much they could change the nature of military operations in the Baltic, the Arctic Ocean or the Atlantic? After all, then the question of how to transport a bulky nuclear device, say, to the shores of America, would disappear by itself ...

However, the naval thought of the Third Reich went the other way. The Fuhrer turned his attention to frog people...

The development of guided torpedoes began in Italy. Back in the years of the First World War, Lieutenant of the Italian Navy R. Paolucci and engineer R. Rosetti created an original design - there were places on the torpedo for two people who controlled the movement of this projectile. The torpedo warhead contained 170 kilograms of explosives and was equipped with a strong magnet that held the charge on the hull of the enemy ship. With its help, on November 1, 1918, it was possible to send the battleship Viribus Unitis to the bottom, which was stationed in the Austrian port of Pola. This experiment

was remembered in 1935, when two officers appeared at the La Spezia naval base - E. Toschi and J. Teskey. They presented a project of a modified underwater projectile. Two months later, a prototype torpedo was launched and behaved completely unpredictably. A guided torpedo was only called that - in fact, it did not hold depth, suddenly changed direction, floated to the surface ...

Nevertheless, things gradually improved, in early 1940, Prince Valerio Borghese created a demolition school, and a special department was organized at the fleet headquarters to develop new types of weapons. At the same time, measures were taken to further improve the "live" torpedo. Now it was 6.7 meters long and 53

centimeters in diameter. Thanks to tanks for ballast and compressed air, the torpedo could dive to a depth of 30 meters. Two screws were driven by an electric motor powered by a battery of batteries. The torpedo developed a speed of three knots (5.5 kilometers per hour) and had a range of 10 nautical miles (18.5 kilometers). In the bow, easily detachable part, there was an explosive charge weighing 300 kilograms, and the fuse was connected to a clockwork, which ensured an explosion at a given time. Behind the warhead was a ballast tank. On it sat the torpedo commander and the diver-mechanic. They were protected from wave impacts by a glass shield, and at the base of the shield were on-board instruments: a magnetic compass, a depth gauge, a roll gauge, a steering lever, engine and pump switches that hold the torpedo at the desired depth. Behind was a container with tools and a spare oxygen device. A "live" torpedo was delivered to the place of attack by a submarine, on board of which special receivers for torpedoes were mounted. Approaching as close as

possible to the target, the submarine surfaced, the divers went out and, having taken torpedoes from the receivers, sat on them and sailed. They tried to stay on the surface as long as possible so as not to use breathing apparatus. Approaching the place of sabotage, the crew sank and the pilot sent a torpedo under the ship's hull. The demolition men fastened the mine to the bottom, turned on the

clockwork and tried to get out as quickly as possible. Theoretically, it was assumed that the bombers could return on a lightweight torpedo back to the submarine waiting for them. But in practice, finding a submarine

at sea turned out to be

a very difficult task. Then the saboteurs got out on land and hoped for fate, trying to cross the front line and return to their own.

Despite the fact that the losses among the combat fighters were quite large, in March 1941, on the orders of the Duce, the 10th Light Flotilla was formed under the command of Captain Vittorio Moccagatta. It included surface and underwater units, which were led respectively by Commander Georgio Giobbe and Prince Valerio Borghese. Then they organized a school for military divers and a base in La Spezia. The submarine division included a school for crews of guided torpedoes and submarines transporting them, as well as a school for underwater saboteurs in San Lepoldo near Livorno.

Cadets underwent thorough theoretical and practical training. They were taught to use oxygen devices, long-distance swims, and the ability to stay under water for a long time. A research "Biological Center" was also established to study the problems associated with prolonged exposure to water. The school of saboteurs was a closed

world, where only volunteers were accepted, who gave a subscription to maintain absolute secrecy. Upon admission, candidates underwent a detailed medical examination and tests for psychological stability. During training and combat missions, divers' faces were covered with black paint,

and a net woven with algae was put on their heads. For greater secrecy, combat operations were also carried out, as a rule, in the dark.

At first, the Italians were not lucky. The

first attack on British ships in Gibraltar was made by the Italians on September 24, 1940. On this day, the submarine "Wider" under the command of Prince Borghese left the base in La Spezia. But when, five days later, the Shire reached the Gibraltar area, it turned out that the British ships had left.

On October 21, the submarine "Shire" again went to sea. In the area of Gibraltar in the Gulf of Algeciras, near the mouth of the Guadaranque River, divers were landed. However, the first torpedo was deformed by water pressure, and the water pump failed in the second. Divers sank torpedoes and were forced to land. At the third torpedo, at a distance of several tens of meters from the target - the battleship "Barham" - the engine failed. The crew, deciding that they would reach the warhead by hand, turned on the fuse's clock mechanism. However, the saboteurs failed to fulfill the planned and the warhead exploded without causing any damage. At first, the British thought that an air bomb had crashed in the port, but after the capture of two unlucky saboteurs, they realized the impending danger and strengthened control over the port and the territory adjacent to it. Then the saboteurs switched to preparing

operations in the port of Alexandria. However, two submarines sent to the raid did not return to the base. Moreover, some crews of living torpedoes were captured, and among them was one of the creators of this weapon, Elias Toschi.

Only in December 1941 did the third operation begin against the British fleet in Alexandria. Prince Borghese himself became its leader. His submarine Shire was supposed to deliver live torpedoes and their crews to the port area. The submarine went to sea on December 14 at dawn. According to the plan, pilot Luigi de la Penne's torpedo attacked the battleship Valiant, and Antonio Marcheglia was going to destroy the Queen Elizabeth. Vincenzo Martello was heading towards the newly discovered aircraft carrier. After mines were laid under the hulls of the ships, the divers planned to scatter special floating explosive devices in the port basin. They were small and also equipped with a clock mechanism that was supposed to blow them up an hour after the explosion of the ships. The idea was to also set fire to the oil, which would probably spill over the port waters after the damage to the battleships.

And while the British were putting out the fire, the divers hoped to get out of the port area, destroy the equipment and hide on the coast, and then move to the mouth of the Nile, where a submarine was supposed to be waiting for them near Rosette in 48 hours.

On the night of December 18-19, the Shire submarine reached the target area. It was one mile from the lighthouse on the western breakwater of the port of Alexandria. The depth here reached 15 meters. A few hours later the boat surfaced. Conditions were perfect

dark, calm sea. Alexandria lay in full view. Live torpedoes moved towards the target. The Comte de la Penne took command. Moving in a semi-submerged state, live torpedoes reached the breakwater and, moving along it, were looking for an entrance to the port, when suddenly a small patrol vessel appeared. The barrier net was opened, and the Italians slipped into the port after the ship.

Nevertheless, the crew of the torpedo, heading for the Valient battleship, managed to stumble upon another barrier. I had to float up and cross over the net on top. As a result, it turned out that the wire was wound around the screw. The torpedo has lost its course. Since the battleship was not far away, de la Penne decided to unhook the warhead and drag it under the ship. It took all the strength - the head weighed about 300 kilograms. Finally, after 40 minutes, he managed to swim and turn on the fuse mechanism at 6 o'clock in the morning. The exhausted Italian surfaced and was spotted by sentries on the battleship.

As a result, both de la Penne and his partner were captured. The British, who understood that the saboteurs had prepared some kind of dirty trick for them, did not find anything more ingenious than to put both of them into the lower hold. If a mine is planted under the ship, then, realizing the impending danger, the saboteurs will not want to go to certain death and will indicate where the mine is. While the captured Italians sat in the hold and counted the time left before the explosion, the crews of the remaining torpedoes did not waste time in vain. Captain Marcheglia has discovered his target, the battleship Queen Elizabeth. The Italians silently swam under the bottom of the ship and laid a mine. They calmly left the port, heading for a deserted beach. In accordance with the plan, the Italians moved towards Rosetta, but were captured by the British along the way. The commander of the third "live" torpedo, Martello, could not find the aircraft carrier in the darkness of the night and chose a large tanker as a target, leaving a mine under it. But even here the saboteurs were noticed, were taken prisoner.

Meanwhile, de la Penne and his partner sat in the hold, but were silent. Then the battleship commander ordered the watertight bulkheads to be closed and gathered the entire crew on the upper deck. At 6.05 there was a powerful explosion. The Valiant rocked and sank to the bottom. Soon the mines exploded under the other two ships. So 6 people seriously damaged 2 battleships and a tanker in a heavily guarded port. But even from this operation, neither the Italians themselves nor their German allies were able to extract obvious benefits. It was rather shallow in the port and the ships only settled on the bottoms. Therefore, photographs taken from the air could not reveal the extent of the damage, and none of the crews of the "live" torpedoes returned to the base. Nevertheless, the Duce, on occasion, could not resist and told the Fuhrer about his "sea devils".
He became interested and ordered to create a similar unit in his fleet.

However, if the Italians, before the end of the war, managed to seriously damage several enemy ships before the end of the war (they even say that the battleship Petropavlovsk, which was blown up in Sevastopol after the end of the war, was on their conscience), then the German “frog people” boast nothing special and failed. The British reacted much faster.

Apparently, they managed to get the information they needed from the prisoners, and soon the first “live” torpedoes with English
crews.

In particular, they managed to sink the Bolzano cruiser. Moreover, the saboteurs themselves managed return safely to base with the help of Italian anti-fascist guerrillas.

However, the British soon lost interest in using "live" torpedoes, judging that the risk was too great. And they continued to conduct sabotage operations with the help of tiny X-type submarines. One of the first successful operations carried out by the little ones was the attack on the battleship Tirpitz. On September 22, 1943, the X-6 and X-7 boats, delivered to a given area by the Stubborn mother submarine, approached the heavily defended harbor in Kofiord (northern Norway), where the Tirpitz was located. Having overcome the system of external anti-submarine barriers, the crews of the boats discovered an open passage in the internal anti-submarine network (as it turned out later, the passage was opened to let a small ship through, which was expected in half an hour). Having defined

the location of the Tirpitz, the crews prepared for the attack, but at that moment one of the boats (X-7) ran aground, not indicated on the map, and surfaced. Observers on the Tirpitz (it was during the day) found the boat.

The alarm was raised on the battleship, and the British had to attack the Tirpitz on the surface. The boat approached the battleship and dropped mines on the ground, set with a delay of one hour. By this time, the X-6, having passed unnoticed under the Tirpitz hull, managed to drop two combat charges and also rose to the surface. Being under enemy fire, the crews sank their boats and surrendered. During the interrogation, an explosion was heard, causing significant damage to the German battleship, which was disabled.

for half a year.

All these circumstances led to the fact that at the end of 1943, Germany became seriously interested in underwater sabotage. The British attack on the Tirpitz predetermined the decision to create the “K” formation (from the word “kleinkampfferband” - a small combat formation) - a sabotage and assault formation of the German Navy, consisting of detachments of human-controlled torpedoes, exploding boats, lone combat swimmers and

small submarine.

The intentions of the Germans were as follows: to develop special baby submarines according to English models and train crews; use these small boats to perform special tasks, for example, to penetrate enemy ports; carry out special combat training of naval assault detachments (strike groups). The purpose of the preparation is to ensure the attack of small surface vessels and attack submarines - babies on enemy coastal areas and important military installations located there (radar stations, artillery positions, etc.).

The divisions of the "K" formation were formed by selected cadres of officers and privates. Almost all of them voluntarily agreed to serve in the new capacity of naval saboteurs. Each of them was obliged to keep the strictest secrecy, agreed to serve without layoffs and holidays, to break all ties with the "civilian environment", including the requirement not to report anything decisively home for months if a special situation required complete silence.

Joining the ranks of the "K" unit, he pledged to devote himself entirely to the common cause, giving him all his physical and mental strength. This, however, did not mean that he was going to sacrifice his life. It was believed that the crews of military equipment, which consisted of representatives of highly civilized peoples of the white race, should have real chances to save their lives when performing a combat mission. Admiral Helmut Geye, the commander of the "K" formation, believed that physical strength was

not as important for the success of individual actions as will and personal discipline. Good physical preparation only increased the chances of success and reduced losses. At the same time, contrary to deep-rooted traditions, saboteurs were taught to act independently, in accordance with the combat situation, and not at all blindly obey the letter of the order. It was respectfully said about the “frog people” that they are only afraid of God, more

- no one.

Unlike the Italians and the British, the Germans made extensive use of underwater saboteurs in operations in land theaters of war to carry out river sabotage. So, in September 1944, British troops captured a bridgehead on the northern bank of the Waal River in the Nijmegen area. The troops on the bridgehead were connected with the rear by railway and highway bridges across the river. The German command, seeking to cut off the enemy units that had broken through from the main troops, decided to blow up the bridges with the forces of underwater saboteurs.

The plan was developed by Himmler and approved personally by Hitler. To carry out the planned operation from Venice, where the detachment of divers was located, 12 people were called to Germany. On the night of September 29, German

saboteurs began their swim. They had to swim 17 miles to Nijmegen, and along the territory of the enemy. The reserve in oxygen-breathing devices allowed them to stay under water for no more than 30 minutes, so the saboteurs floated on the surface most of the way.

The first four safely reached the railway bridge, discharged the air cylinders that kept the mines afloat, and when the charges sank to the bottom under the bridge, two saboteurs plunged and set the fuses for a predetermined time. The second group, which delivered the

bombs to the highway bridge, could not place the charges in the intended place for a long time. And when the supply of oxygen ran out, they surfaced and attached mines to the bridge support. Gathered together,

the saboteurs moved on down the river. Having sailed for about seven miles, they saw rockets illuminating the front line of the German troops. The saboteurs went ashore and, leaving their rubber suits, moved towards the location of the German troops. Suddenly they heard voices. They called out, but not in German. It was a patrol of a detachment of Dutch patriots from the Resistance movement. The saboteurs rushed back to the river. But it was too late. Behind shots rang out, one of the swimmers was killed on the spot, another mortally wounded, the rest surrendered. And yet, thanks to them, the railway bridge over the Waal was put out

of action by an explosion and the highway bridge was damaged, which was considered a good success. German combat swimmers also blew up a battery of 150-mm

cannons, the Antwerp lock and several other bridges across the Oder on the Soviet-German front. Let's say a few words about the Japanese saboteurs. Midget submarines

began to be used by them in December 1941, when the attack on Pearl Harbor was launched. Five crews started from carrier boats eight miles from the base. The entrance to the harbor, closed by anti-submarine nets, was open by morning. However, only one boat penetrated there and attacked the floating dock, after which it was sunk by a destroyer. Two were missing, the fourth was destroyed by a patrol ship at the entrance to the raid, the fifth, which landed on stones, was captured by the Americans.

On May 31, 1942, 10 miles from the entrance to the harbor of Diego Su Ares (Madagascar Island), two Japanese midget boats launched from the carriers. Encountering no resistance from anti-submarine forces, they entered the harbor, torpedoed the battleship Ramilles and sank a large tanker. The last successful sabotage by the Japanese was in December 1944 -

March 1945 in the area of \u200b\u200babout. Mindanao in antiamphibious combat operations and during operations on coastal sea lanes. Based on the islands of Davao, Zamboang and Cebu, they attacked enemy ships and vessels, according to the coastal observation post established near the Surigao Strait.

In total, during the specified period, they sank 5 transports, 2 cruisers, 5 destroyers and an aircraft carrier. In many respects, this success was achieved due to the weak opposition of the American anti-submarine defense forces and due to the well-organized guidance of boats on the targets of attack. At the beginning of 1944, special teams of combat

swimmers were created - "fukuryu" (dragons of happiness). The swimmers were equipped with special suits and oxygen-respiratory devices, which allowed the saboteur to dive to a depth of up to 30 meters and move there at a speed of 2 kilometers per hour. The tactics boiled down to the fact that a swimmer with a live charge, which was kept afloat with the help of an inflated leather bladder, approached the bottom of the ship and hit the metal hull skin with a fuse. During the explosion, a hole was formed, but the swimmer also died. By the summer of that year, Kaiten human-controlled torpedoes were designed and

built. However, their use against American ships anchored as a result of the concentration of anti-submarine defense assets in the anchorage area turned out to be ineffective. The Japanese tried to change tactics and attack ships in transit by sea, using their speed advantage, but there is no exact data on the success of these attacks.

So, despite all the efforts made, combat swimmers still did not have a big impact on the course of the Second World War. And if a halo of martyr glory appeared over them after the war, it was mainly thanks to Prince Borghese, whose book was widely advertised and translated into several languages, including Russian.

And therefore, in the future, the baton was picked up by the Americans and our compatriots. They

they managed to use trained dolphins as "live" torpedoes, invented many more technical devices that allow a person to stay under water for a long time, descending to great depths ... Combat swimmers continue to improve their skills to this day, but the story of their activities is beyond the scope of our story .

Therefore, let's go back to the time of the Third Reich and talk in more detail about one really interesting invention - a tiny boat, which was supposed to operate in conjunction with combat swimmers, was often used by them to deliver warheads almost to the place of sabotage. The small size of the boat ensured its greater stealth. However, it was not only that ... The big stake in combat operations was also divided into midget

submarines armed with conventional torpedoes. Initially, a single "Neger" was fired (two conventional electrically driven torpedoes, located one above the other). In the upper head part, instead of an explosive charge, there was a driver's cab, covered with a transparent cap. Approaching the desired distance, the driver carried out the tip, and then disconnected the lower torpedo.

For the first time, seventeen Negers were used on the night of April 21, 1944 in the Anzio region in Italy. However, despite the suddenness of the attack, the novelty of the combat means used, the Germans managed to sink only two patrol ships. The actions of the Negers in the English Channel were just as ineffective: with great difficulty, they sank only the old English cruiser Dragon, a minesweeper, a destroyer and several transports. Then the "Negers" were replaced by single-seat

submarines "Bieber" with a displacement of 6.3 tons (together with two torpedoes) and an underwater speed of up to 5.3 knots. However, the design of the "Bieber" was imperfect. They had an insignificant range, the driver, poisoned by carbon monoxide from a surface-mounted gasoline engine, often lost consciousness while entering the combat course.

Nevertheless, the first experience of using boats of the Bieber type, due to surprise, gave a completely satisfactory result. On August 29–30, 1944, 18 of these boats left Fécamp for the Bay of the Seine. After destroying the Liberty-class transport and one landing craft, they returned without loss to the base.

However, in the future, due to low technical qualities, they were practically not used and did not have a noticeable effect on the course of hostilities. More successful

were double midget submarines of the Seehund type with two torpedoes, a displacement of 15 tons and a speed of up to 6.3 knots. The improved Seehund midget

boats operated in the maritime area between the Thames and the Scheldt, as well as in the Pas de Calais from January to April 1945. In total, more than 70 boats participated in the operations, destroying ships with a total displacement of about 100
thousand tons.

This success is explained, firstly, by the well-placed intelligence of the Nazis, who knew exactly the composition of the convoys, the time of their departure, and the route of passage. Secondly, along the entire length of the Thames-Scheldt route, luminous buoys were installed every 2 miles. Seehunds, being close to the fairway, were waiting for the passage of the next convoy and attacked it at periscope depth from short distances. They themselves were very difficult to detect, both visually and with the help of radar. The last time the

Seehunds were involved in transport tasks during
supplying the German troops besieged in the Dunkirk area in April 1945.

Nevertheless, here, it seems, the Nazis did not see through all the charms of the new gun ...

This story was unearthed by the captain-engineer of the second rank L. Shapiro. Twenty years ago, he published in the journal Technique for Youth a story about how the Germans in 1944 tried to unleash a "total submarine war with the participation of completely new submarines, against which the enemy would be helpless." As usual, the

Goebbels ministry relied not only on the shameless
lies, but also some facts.

As it turned out after the defeat of fascism, the German command pinned its hopes on the accelerated construction of special boats, which was carried out in the city of Kiel under the guidance of engineer Helmut Walter - was carried out in absolute secrecy ...

Back in the early 1930s, Walther drew attention to the curious properties of a substance known to chemists for a long time - hydrogen peroxide. In high concentration solutions, it immediately set fire to wood, fabrics and other organic materials, and the flames could be extinguished only with water, and not with sand or a fire extinguisher. The combustion continued even without air. And Walter realized that peroxide could be used as an oxidizing agent for burning fossil fuels in submarine engines. You didn't have to be an expert to appreciate the prospect that was opening up.

The problem of speed is one of the main ones in underwater shipbuilding. For the best boats of those years, it did not exceed 7-8 knots (1 knot - 1.853 kilometers per hour). The ships could develop it for no more than an hour, after which they had to float to the surface to charge the batteries. The specific weight of underwater electric power plants was 60-75 kilograms per 1 horsepower, they took 22-25 percent of the displacement - boats. The increase in speed could only be achieved by creating powerful and lightweight engines. Walther attempted to relate this problem to the unusual properties of a substance traditionally used only as a bleaching agent in the textile industry (the concentration of solutions usually did not exceed 35 percent).

Studies have shown that high concentration peroxide solutions are unstable. When heated or under the action of catalysts, they easily decompose. The process can be considered as the oxidation of hydrogen contained in a water molecule by one of the oxygen atoms. The second oxygen atom, which has nothing to react with, remains free. The reaction proceeds with the release of a large amount of heat. In 1933, Walter

already had a graph of the temperature of the decomposition products and other quantities versus the concentration of peroxide. All dependencies turned out to be linear. This most important property made it relatively easy to regulate thermal processes in engines.

The bigwigs of the military business supported Walter. In 1936, an experimental combined-cycle turbine unit (PGTU) with a capacity of 4,000 horsepower was built and tested. In the process of its creation, unexpected problems had to be solved. It was found that dust, rust, alkalis and other impurities greatly accelerate the decomposition of the solution and create an explosion hazard. It was decided to use elastic containers made of synthetic material - polyvinyl chloride. Such containers with a solution were placed between two boat hulls - strong and light. Thus, the free volumes between the buildings were rationally used. In addition, the supply of peroxide to the engine pump was provided by a simple sea water pressure. For underwater speeds of the order of 25-30 knots that

Walter hoped to get, the external forms of low-speed diesel-electric boats and the methods of controlling them were not suitable. Blowing models in a wind tunnel helped to choose the optimal hull shape. When creating a control system for depth and course, they also borrowed the experience of aircraft construction and put dual rudders on the model of the Junkers-52 aircraft.

In 1938-1942, an experimental boat with PSTU was built at the Kiel shipyards. She received the code U-80. On trials, the ship showed a full submerged speed of 28.1 knots. The designers knew that with such a rapid movement it was impossible to extend the periscope - the oncoming stream would simply blow it away. Therefore, a sealed lamp was installed in the bow to measure the speed. The tests were carried out in the evening, when the lamp in the water is clearly visible. On the measured line, the boat was accompanied by a torpedo boat, according to the log of which its speed was

measured. On the U-80, Walter used a propulsion system with the so-called "cold process". The water and oxygen vapors obtained as a result of the decomposition of peroxide were used as a working fluid in the turbine, after which they were removed overboard. Free oxygen was lost, although it could be used as an additional oxidizer for fuel combustion. On the other hand, the installation was dramatically simplified, and the ship's construction period was reduced. A

Walter was in a hurry to check the adopted technical solutions and to interest the command of the German fleet.

In 1943, the first combat submarine with two steam-gas turbine units with a capacity of 2,500 horsepower each was tested. The plants were already working according to the "hot process". The submerged speed was 22 knots - 16 knots more than German diesel-electric boats of similar displacement. This became possible only because the share of PSTU was reduced to 5 kilograms per 1 horsepower. And although it was decided to force the creation of such boats of various displacements, the Germans still had to abandon their construction. The fact is that from the very beginning of research, Walter, greedy for

money, promoted his work in Goering's department, among the command of the air force. Power plants with hydrogen peroxide have found application on Messerschmitt-designed aircraft, in pump drives on V-2 rockets and other types of military equipment. The need for peroxide for the needs of the Air Force has increased dramatically. And each submarine needed 55 tons of 80% solution for one refueling. Goering's office was given preference.

According to the captain of the second rank L. Shapiro, in total the Germans managed to build 11 boats from PSTU. Although this took more than ten years and huge material resources, the boats were never brought to the required operational reliability. In essence, they did not take part in the submarine war. So, as you can see, this hope for a "miracle weapon" did not come true.

After the defeat of Nazi Germany in England, the USA and Sweden, work was carried out in order to bring Walter's plan to practical implementation. It took a few more years. In the meantime, the successes of nuclear energy made it possible to more successfully solve the problem of powerful

underwater engines. However, even today, with the spread of nuclear-powered ships, this idea has not been forgotten. Not so long ago, Novye Izvestia published an article about the successes of American science. “Representatives of the US Navy reported that they have managed to develop a new rocket fuel that will be absolutely harmless to the environment and maybe even beneficial to humans.” No matter how paradoxical it may sound, the newspaper continues, but the fact remains: the novelty almost entirely consists of old medicinal preparations - alcohol (?) and

hydrogen peroxide. The thing is that employees of the US Navy research complex in China Lake used a catalyst capable of splitting peroxide into simple water and oxygen. And then a lot of heat is generated, and in a mixture with alcohol, all this quickly and with a 100% guarantee is split, and in simple terms, it is burned, and please, you can use this mixture in any, naturally, environmentally friendly engine.

Hydrogen peroxide engines immediately became interested in NASA. They are already planning to use them to launch spacecraft and adjust the movement of artificial Earth satellites. On the ground, similar engines could be used to power completely new cars and other 21st-century developments. Moreover, journalists note that the power will be the same as that of traditional engines and even more than theirs, but they will be perfectly clean and environmentally friendly.

One of them - Alexander Kapkov - however, believes that the Americans simply appropriated one of our half-century-old developments. So, at least, a familiar physicist told him, who worked for many years in one of the "mailboxes" and provided documents stating that similar developments were carried out in our country about half a century ago.

> “As evidence, the scientist put on the table a book by Felix Chuev about the talented inventor of Russian weapons Stechkin, published by the Young Guard in the ZhZL series back in 1978,” writes Kapkov. - Indeed, there, on page 215, I read literally the following: “New people came
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> to the Institute of Engines, who began to expand the topics in the field of new research. It took new staff, laboratories,

the people exceeded a thousand people. Organized several branches. Stechkin has long been interested in underwater engines. Back in 1947, he supported a new submarine engine powered by hydrogen peroxide, proposed by Academician E. Chudakov and engineer I. Varshavsky. Some scholars then spoke out against it. Stechkin listened to all opinions and invited Varshavsky, whom he had known since 1945 - he worked as the head of the rocket engine department at the institute of the Academy of Artillery Sciences. A full member of this academy, Stechkin, who advised the jeerdists, said to Varshavsky: “Make your own
engine, it will work!” The motor was built,
but trouble happened with the very first prototype: it exploded during testing. The designers were summoned by Stalin. - How much time do you
need, Comrade Chudakov, to make a new engine? - he asked. “Six months,” one of the ministers hastily
answered. - Can't you go faster? Stalin asked. - It won't
work. I give you two weeks. And the new engine
was completely ready
and tested in two
weeks. Works on it were advised by Stechkin.

And in the early 1950s, as reported in the book, Chudakov's laboratory began the creation of engines already on hydroreactive substances for the Navy.

In other words, what the Americans happily report about, and even a wider range of clean peroxide-hydrogen and "hydrant" engines, we did more than half a century ago. Submarines sailed the seas and oceans on such engines, producing pure hydrogen, oxygen or methane, leaving no dirty plumes behind. But why have such environmentally friendly engines not been used in our national economy?

And this lack of demand is explained quite clearly. N. S. Khrushchev, who replaced Stalin as the USSR, was very zealous about all the achievements of his predecessor, including scientific ones. In addition, a new atomic-space period began in the technical development of the powers. And then, to the accompaniment of space and nuclear victories, alcohol-peroxide submarines were sunk in the waters of our seas. And, perhaps, they would have lain in vain at the bottom of the sea, if they had not been forced to recall the “latest” developments of the American Navy. This is how Alexander Kapkov explains the situation. But perhaps there

is another version? Namely: the Americans, just like our specialists, were very zealously interested in the scientific and technical developments of the Third Reich at the end of World War II. About how we and they exported equipment in whole echelons from enterprises that manufactured aviation and rocket technology, electronic equipment. And, of course, all the technical documentation that they only came across, as well as more or less competent specialists.

Thus, it is logical to assume that both our and American specialists, figuratively speaking, at one time ate from the same feeder. And then everyone went their own way, not forgetting from time to time to steal different technical secrets from each other.

And now, it seems, the old idea has entered a new circle. Moreover, there is a specific technical reason for this. Once the Russian Academy of Cosmonautics invented a way to launch airships with so-called phlegmatized (that is, non-explosive) hydrogen into the high layers of the atmosphere. This system is called an atmospheric satellite transponder (AS-R). Moreover, the automatic AS-R system allows you to keep it in space with an accuracy of ten meters. And what’s more, you don’t need to take any fuel with you on board this 40-meter aircraft, since it has a device on board for the decomposition of water condensed directly from the atmosphere. It is this that ensures the feeding of the AS-R as hydrogen leaks. To hang continuously in the air at an altitude of 25 kilometers, the new

Russian airship of the latest generation is capable of continuously for more than a year and transmits signals relayed from the Earth and from satellites to the right place.

For the time being, no one needed all this. But at the end of 1998, the United States announced the creation of a new system of universal communication of everyone with everyone, which is based not on satellites, as usual, but on airships. According to the calculations of the company, which is now headed by former US Secretary of State and NATO commander Alexander Hake, it is the Sky Station project, based on 250 high-altitude airships, that is capable of providing 80 percent of the world market with cheap cellular communications, Internet channels, etc. The remaining 20 fall on sparsely populated regions of the Earth, where instead of airships it is more logical to use all the same satellites.

So, here is the truly dizzying career that an idea more than half a century old is making today. However, according to some historians, not such miracles happened during the Third Reich. Germany threatened to conquer the seas with her

first-class submarine fleet. Their submarines were built by the in-line method and consisted of 1113 pennants. For comparison: by the beginning of the war, we had the largest submarine fleet - more than two hundred submarines. The German "U-boats", powerful and comfortable, served as the prototypes of our post-war boats. By 1944, the Germans had learned to operate in the area from Antarctica to the polar northern ice. They went under water on diesel engines - with the help of snorkel hoses, repeatedly increasing the range ...

On June 30, 1944, two Russian hunting boats entered into battle with the German U-250 submarine near Koivisto Bay, in the Baltic. "MO-105" was immediately torpedoed, but "MO-103" in a few hours covered the enemy with depth charges. The surviving helmsman from MO-105, Ivan Martemyanov, said: we did not see a trace of torpedoes! After the "German" was sunk, several living submariners were thrown to the surface. One of them, U-250 commander Werner Schmidt, admitted that his submarine was armed with T-5 Krapivnik electric torpedoes, which do not leave a bubble trail and follow the noise of the victim ship's propellers. Hitler's top-secret weapon!

We then managed to raise the sunken boat from the bottom, although the Germans fiercely bombed and fired at the area of its death. We unraveled the secret of her terrible torpedoes. The submarine fleet of the Third Reich reached the pinnacle of technical perfection by the end of the war. In addition to acoustic and magnetic torpedoes, the Germans brought in the world's best boats of the 21st series, planning to build 230 such ships in 1945. Streamlined, they had an underwater course of 17.5 knots - twice as large as the boats of the countries of the anti-Hitler coalition. Under diesels, snorkels and electric motors, these boats could travel 10,000 miles. And this record will be beaten only by nuclear submarines. And the best result of those times was given by the commander of the U-977, Heinz Schaeffer - 66 days of navigation without going to the surface.

The Germans equipped their boats with collapsible observation gyroplanes, similar to mini-helicopters, to use them to detect enemy ships and aircraft long before they themselves were detected. They tested boats with "Kreislauf engines" - installations that ensured the operation of diesel engines under water and allowed them to reach speeds of 20-25 knots versus 7-8 for conventional Allied submarines. Such a case demonstrates

the strength and inhuman organization of the Reich. In 1955, a German came to one of our occupation commandant's offices in Germany and reported that boats were sunk somewhere near the island of Rügen in the Baltic, ready to emerge at any moment. They believed him and for almost a year they were looking for this monstrous underwater cache. And they found it, starting lifting work by the forces of the 447th division of the emergency rescue service of the Baltic Fleet.

“All the submarines inside the compartments were completely dry. Only water penetrated inside one boat through external retractable devices, the tightness of the durable hull was broken ... In the rest, everything was in perfect condition, even food supplies turned out to be usable, ”wrote Sergey Ptichkin in Rossiyskaya Gazeta on February 5, 1996. And all these boats carried the swastika on the cabins, being the last Nazi ships of the 26th series. All of them were secretly prepared for conservation in the winter of 1945 and laid on the ground under a 45-meter water column, carefully disguised from above with algae. For what? Ptichkin believes that specially selected

crews and commanders, dedicated to the secret of the upcoming operation. In the event of the victory of the Allies, after some time, when the winners, the USA and the Union, would become the worst enemies (and Hitler hoped for an outbreak of contradictions already in 1944), they had to penetrate the mothballed cruiser boats and start sinking the ships, provoking a new world war. war between recent enemies of the Reich. The

version is very plausible. After all, the Germans even had a command post for such a secret operation - Antarctica. It remained practically unexplored until the grandiose expeditions of the International Geophysical Year of 1957-1958, and there were no stationary scientific stations there. The largest amount of information about this uninhabited mainland covered with many kilometers of ice was with the Germans. In 1938-1939, they organized the huge expedition of Captain Alfred Ritscher, which was personally supervised by Reichsmarschall Goering. And many believe that in subsequent years the Germans secretly built a second Berchtesgaden here - an underground-under-ice city with greenhouses, power stations, food supplies and weapons, with communications equipment. But Hitler never managed to escape to this hidden fortress. However, German personnel were there, and it could become a command post to provoke a Russo-American war.

There is practically no confirmation of this version. Except for two things. The first is that the successor of Hitler who committed suicide was Grand Admiral Doenitz, the creator of the colossal Hitlerite submarine. The second is the well-known fact that the United States organized an expedition to Antarctica in 1947, calling it "High Jump" - "High Jump". It was led by Admiral Richard Byrd, the hero of the flights over Antarctica in 1929. Back in the distant 1970s, reading Soviet travel books, I wondered why Byrd was given an aircraft carrier, cruisers and destroyers for this expedition - ships for scientific purposes and sailing among the ice are not very adapted? And why were there 4,000 people on the expedition? This expedition anchored at the Queen Maud

Land - exactly at the area over which Captain Ritscher's "condors" flew in 1938-1939. But the whole mission was curtailed after some one and a half months, and Baird himself, upon his return, ends up in a psychiatric hospital. Journalist V. Prussakov, who deals with Hitler's secrets, cites an article in 1948 from the Brizant magazine: they say Byrd said that his expedition was attacked by enemy aircraft, and four of his cars disappeared without a trace. And after he announced a possible enemy attack on vehicles capable of flying from pole to pole at fantastic speed, he was taken to a hospital. So the existence of a secret headquarters of the Nazis in the then unexplored Antarctica is quite possible. In the

fall of 1944, the Germans themselves worked on the atomic bomb and were well aware that after their defeat, the war between the Russians and the Americans could be nuclear. And somewhere in the mid-1950s, when Germany really revived and started a very strong Bundeswehr, when the USA and the USSR were teetering on the brink of war, at a signal from distant ice, mothballed boats could rush into pirate raids. “And it would never have occurred to anyone that it wasn’t the American Nautilus or the Soviet Lenin Komsomol that

launched a successful torpedo salvo, that Grand Admiral Denitz’s ‘wolf packs’ emerged from oblivion,” writes a journalist from Rossiyskaya Gazeta.

Note that the leaders of Nazi Germany were great mystics, and in the terrible war they saw Ragnarok - the Twilight of the Gods, in which Russians, Americans, Jews, and even most Germans would die - and only the chosen, true Aryans would survive. Even the choice of a hiding place for submarines is characteristic - the island of Rügen, formerly the island of Ruyan (Buyan from Russian fairy tales). The same sacred center of the Slavic people exterminated by the Germans a thousand years ago - the

tribes of the Lyutichs and Obodrites. Ptichkin believes that the Germans' fantastic plan to provoke the Third World War was thwarted by the Russian submariner Alexander Marinesko. On January 30, 1945, on the S-13, he sank the giant liner Wilhelm Gustloff, which, under the strongest cover, took out 7,000 Nazi submariners from Danzig. Almost all of them died, and Hitler declared Marinesco a personal enemy. Were there among the drowned submariners and specially trained crews for hidden submarines? And is it not because Hitler was so furious that he did not have time

prepare a replacement

for them? By the end of the war, the Germans released into the sea small submarines of the 23 type, arch-secret for that time. Since the Allies had long gotten the hang of detecting surfaced German submarines with radars from afar, this little one was made purely underwater. It had two electric motors. One, with a power of 600 horsepower, was turned on during the attack. The other, only thirty forces, served for an almost silent economic move. In the spring of 1945, these ships managed to operate off the coast of England, seeping through the super-dense anti-submarine defense system. They were not heard by acoustics, and being under water for several days in a row made British radars useless. The Nazis did not lose a single "23rd" then! The Germans were preparing to use them in Operation Hannibal - in cutting off supplies by sea from Britain and Anglo-American troops in Europe. And didn't Marinesko save our allies then? By the way, he struck an almost suicidal blow, attacking the Wilhelm Gustlov in the surface position, entering the shallow water from the coast. But the title of Hero was not given to him during his lifetime for this ... Why? Did Stalin really have his own views on those submariners? ..

> "Let's imagine once again that the USSR fell by 1942 and was divided between Germany and Japan. The terrible hour of England is coming, which falls defeated. At the remnants of the Western world, along with it, the only base for bomber raids on the Reich disappears - after all, from the territory of the USA they do not reach the Nazis. Together with Britain, the base for the fight against the German submarine fleet, which already appears with the Nazis, also disappears. Germany grabs North Africa and the Middle East (oil), Japan occupies Australia and India (raw materials and labor). The United States,
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> feverishly creating atomic weapons, jet aircraft and missiles, is forced to fight the Japanese in the Pacific Ocean, and the Germans in the Atlantic. The latter are deploying a gigantic construction of aircraft carriers, magnificent dreadnoughts of the Bismarck type and submarines. World War II drags on for several years. The Americans are trying to break through on aircraft carriers to the shores of Europe in order to launch nuclear strikes on the Third Reich, but the Germans beat them in the ocean. Their ships also take off "V" and "Arado" with atomic charges on board. In order to finish off the US, choking in the struggle on two fronts, the stocks of chemical weapons in Germany and bacteriological weapons in Japan are used. The latter, by the way, had submarine aircraft carriers - gigantic, even in later times, boats of the "I" type with two Seiran light bombers in a sealed hangar. Having surfaced, the submarine released them on a raid on the United States. They were supposed to carry bacteriological bombs.
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> Yes, we almost forgot - the Germans inside America have a well-organized sabotage-terrorist "fifth Column" - Western Ukrainian nationalists. Masters of subversion, assassination and conspiracy. The Japanese, on the other hand, could give their kamikazes for German cruise missiles with atomic and chemical charges. Moreover, the Western Ukrainian guys would have cleverly placed radio beacons for such missions of the German-Japanese miracle weapon. Poor New York, San Francisco and Boston! After all, among other things, the United States would be surrounded by Latin American countries, which were very sympathetic to the Germans and did not like the North Americans. Take at least Chile or Argentina, whose future president Juan Peron even took pictures with Hitler ...
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> What was in store for America? The transformation of New York into Neuebersdorf, the destruction of skyscrapers and the emergence of a cozy colonial town on the site of Brooklyn. And, of course, camps with gas chambers. For the Nazis hated the States, considering them a country ruled by a group of Jewish bigwigs.

Such an eerie picture was painted by Maxim Kalashnikov. How faithful is she? In my opinion, the author again exaggerated, wishful thinking. And the point is not even that the Nazis, even by 1950, would hardly have been able to create a nuclear device that could fit on a rocket or an airplane - we have already talked about this. The painted picture begins to be false already in the details. Namely: another miracle weapon - unique torpedoes that left no trace, turned out to be ... defective.

I will refer to the "Technology - Youth" so often quoted by Kalashnikov. In December 1973, she published an article by Mikhail Chekurov "Admiral Doenitz's wooden sword", which tells the following story.

On October 17, 1939, the voice of a Berlin announcer announced to the world about a successful naval operation. The submarine "U-47" penetrated the main base of the English fleet, Scapa Flow, and, having sunk the battleship "Royal Oak", returned safely to Germany. Shortly thereafter, her
commander, Lieutenant Commander Gunter Prien, told the press colorful details of his feat. The holder of the Knight's and Iron Crosses kept silent about one thing: how could it happen that when firing at a large stationary ship, out of 8 torpedoes fired, only 3 hit the target? No one attached importance to this incomprehensible and disturbing fact. And in vain...

In April 1940, the Nazis treacherously invaded neutral Norway, and German submarines took up positions off the coast of Scandinavia. 42 submarines armed with a new type of torpedoes. Such an armada, according to the plan of the admirals, was supposed to neutralize the power of the English surface fleet. Further events developed like this. Before the British had time to actively
intervene in the course of hostilities, the most important military and administrative centers of Norway were occupied. When the royal fleet began to strike at enemy ships and transports, the submarines of Admiral Doenitz launched their torpedoes. But here's the paradox: attacks from under the water surprisingly often ended in vain. By mid-April, no one had any doubt that German torpedoes were unreliable.

The commander of "U-48" G. Schulze was one of the first to be convinced of this. On April 11, he saw the English heavy cruiser Cumberland through the periscope. The position of the submarine, the distance to the target - everything promised success. A three-torpedo volley followed and ... the cruiser calmly melted over the horizon.
In the evening of the same day, Schulze attacked the heavy cruiser York. This time the pirate seemed to be lucky; he distinctly heard three explosions. Alas, his torpedoes exploded too early, at a distance quite safe for the ship. April 13 "U-48" and "U-46" attacked the
battleship "Worspite" - and again premature explosions. Other submariners reported similar incidents. Finally, on April 15, G. Prien received indisputable evidence of the malfunction of his torpedoes. On this day, he secretly crept up to the anchorage of English ships, and then - from a distance of 750 meters - fired a four-torpedo volley at a solid wall of transports and cruisers. Missing was practically impossible, but the U-47 crew did not hear a single explosion. Prien personally checks the readiness of the remaining torpedoes, reloads the vehicles, attacks, and again, instead of explosions, silence.

The courtesy and correctness of a junior in rank towards a senior is an elementary norm of behavior for any officer. But when Lieutenant Commander Prien reported to his superiors about the deplorable results of his attacks, his voice broke into a cry: “We were sent to fight against a strong enemy, armed with unusable weapons,” Prien was indignant. “I don’t intend to go to sea with these wooden blanks anymore!”

And Günther Prien was not alone in his indignation. None other than the commander of the German submarine fleet, Admiral Doenitz, bitterly noted in a secret diary: “In the history of wars, there was perhaps no case when soldiers were sent into battle with such imperfect weapons.” The German submarines were rushed back to their bases and an
investigation began.
a phenomenon that Dönitz himself called "the crisis of submarine warfare caused by the failure of torpedoes."
As you know, in the second half of the 19th century, a new formidable weapon of naval warfare appeared: the Whitehead self-propelled underwater mine, or, as it was later called, the torpedo. On January 14, 1878, Russian
boats launched from the Grand Duke Konstantin steamer attacked and sank the Turkish patrol ship Intibakh with torpedoes. This was the first case of the practical use of torpedoes, and the explosions in the Batumi roadstead were heard by sailors all over the world. Torpedoes quickly gained popularity, and the appearance of submarines even more

expanded its capabilities. So, for example, during the First World War, most of the sunken ships died from torpedo explosions. In search of protective

measures, shipbuilders had to revise individual ship components. To begin with, all vital objects were concentrated in the "citadel" - an armored box in the middle of the hull. Then - on the recommendation of Academician Krylov - an "unsinkability system" was introduced to prevent the capsizing of damaged ships. Finally, special thickenings began to be made on the sides - boules filled with liquid fuel, and the hull itself was divided into compartments by watertight bulkheads. All these design tricks did not eliminate the torpedo hazard, but they significantly reduced the effect of an underwater explosion. But the designers of the torpedoes did not doze off. Shortly before World War II, the non-contact

electromagnetic fuse was invented. The principle of its operation was that a constant magnetic field was created around the torpedo. When it passed under the metal hull of the target ship, the magnetic field was distorted, and the fuse immediately went off. The explosion took place not at the protected side, but under the bottom; the destruction in this case was several times stronger than in the explosion of a conventional torpedo.

Although the new weapon was hardly tested, Admiral Doenitz had high hopes for it. Together with the creators of the G7e type torpedo, he believed that there were real prospects for “breaking the back of enemy battleships with one hit.” And now, instead of "breaking

the ridges" - bewildered reports of underwater aces. Outwardly, it all looked like a tragic and strange accident. Tragic, because such were the consequences generated by it for the fascist fleet. And strange, because the mass production of non-explosive ammunition took place in a technically advanced country, where order and accuracy are recognized as national traits.

What was the reason for the torpedo failures? Who was to blame? Let's try to figure it out. The

Experimental Institute of Torpedo Weapons was engaged in the design and testing of new torpedoes in Germany, and production was carried out at several enterprises, of which the Torpedo Directorate of the Nile military shipyard was the leader. What assessment did the command of the fascist fleet give to their work?

“The methodology for testing new types of torpedoes is treacherous ... German submarines, armed with new torpedoes, turned out to be virtually unarmed ... Shortcomings were found in the preparation of torpedoes for delivery to the fleet in the Torpedo Directorate and at the Experimental Institute training ground. Their essence is being investigated separately, ”admiral Doenitz threw thunder and lightning. And I must say, he had a reason for this. After all, the very fact of launching into mass production - without proper testing! - such an expensive and complex type of weapon as a torpedo suggests that this is not a technical error, but a crime.

By order of the commander of the naval forces, Grand Admiral Raeder, the military prosecutor's office began an investigation. It lasted about a year - a considerable period for wartime. Raeder insisted that the main culprits - torpedo weapons inspector Admiral Gotting, head of the Experimental Institute of torpedo weapons Admiral Ver and two leading engineers - be brought to justice.

Admiral Götting was acquitted by the court, Admiral Vera was found guilty. But the essence of the accusation boiled down only to the fact that the institute he headed did not ensure the development of a reliable design of torpedoes and recommended them for adoption without proper testing. The other defendants were accused of holding positions that were not in line with their technical knowledge.

Before the verdict of the court, few doubted that the perpetrators would be severely punished. Indeed, according to Doenitz, only in April - May 1940, during the attacks of German submarines, 3 battleships, 7 cruisers, many destroyers and transports escaped with a “light fright” - all this with a total displacement of over 300 thousand tons. It must also be taken into account that the British depth charges turned out to be quite serviceable, and for four German submarines their attacks with “wooden blanks” turned out to be the

last. However, the verdict of the court caused general astonishment. Admiral Vera was just fired from

fleet and identified as an honorary prisoner in the Rhine fortress of Gelmersheim. Leading engineers were sentenced to short prison terms. But the case was not limited to this
judicial farce. The chief of the Luftwaffe Goering six months later took the honorary prisoner into his system and instructed him to create aircraft torpedoes. Until the very end of the war, Ver designed such torpedoes, and his sins in the fleet were completely forgotten. In 1968, West German pensioner Oskar Ver died. He did not leave any explanation as to the reasons for the liberal attitude of the Nazi court towards him and the patronage of Goering.

The German historian F. Ruge complained that the lack of appropriations for engineering research led to the fact that tests of "non-contact" torpedoes of the Q7a and G7e types were carried out according to reduced, "criminally shortened" programs ...
“The creators of weapons in great Germany did not lack funds,” Doenitz objects to him in his memoirs and immediately admits that ... during the testing of new torpedoes, only two firings were fired, far from brilliant in results, after which a recommendation immediately followed for adoption.

Now that the materials of the investigation have been declassified, we can safely say that the paradox of firing "wooden blanks" was due to malfunctions in three mechanisms: an electromagnetic fuse, a contact fuse, and a hydrostat. During field tests, an
electromagnetic fuse was installed on an outdated G7v torpedo. At the same time, a new torpedo with a more powerful engine and, as a result, a stronger vibration was launched into the series. It was the vibration that caused the premature explosions. Even from the point of view of an ordinary engineer, such a miscalculation is blatant illiteracy. How could entire design bureaus and military departments overlook it? In addition, it turned out that when creating an electromagnetic fuse, the
features of terrestrial magnetism were not properly taken into account. As you know, the magnetic field of our planet is unstable, with many different anomalies. In particular, off the coast of Scandinavia, fuses were affected by an anomaly created by iron ore deposits in Sweden. True, the sensitivity of the fuses could be adjusted, taking into account the magnetic declination, but the accuracy of such adjustment was not high.

The contact fuse turned out to be even less reliable than the electromagnetic one. The classic scheme of the action of a contact fuse is as follows: the striker pierces and explodes the primer, and the primary detonator - the intermediate detonator - the main charge of the torpedo sequentially explodes from it. Such a design justified itself in the First World War and was considered absolutely reliable. What was the surprise of the forensic experts when they found that on the “under investigation” fuses, the firing pin was too short, and the igniter primer was very unreliable: either it did not work at all, or it burned out too quickly, not having time to transfer the explosive impulse to the primary detonator. And finally, the complexity and unreliability of the striker design led to the fact that at angles of torpedo meeting with a target of less than 50 °, it often jammed. The design of the hydrostat was also unsuccessful. The principle of operation of
the devices is based on the fact that it perceives the pressure of the water column corresponding to the given depth of the torpedo, and maintains this pressure by shifting the horizontal rudders. It turned out that in the G7a, G7e torpedoes, the rudder thrust passed through the hydrostat membrane, and its seals were not tight. If we take into account that excess pressure always accumulates inside the hull of a submerged boat (due to the gradual release of compressed air), then the essence of the malfunction is easy to understand. The hydrostat perceived excess pressure and, after a volley, took the torpedo to a depth exceeding the specified one.

According to Doenitz, the cause of this defect became known only in 1942, after the commander of U-94, while in a combat position in the Atlantic Ocean, on his own initiative, checked the hydrostat. Of course, by doing this, he grossly violated the instructions, but he convicted the designers of technical illiteracy. How could such a "hydrostatic incident" happen? So far, no one has been able to give an intelligible answer to this question.

It was impossible to blame the gross blunders that had been made on haste in work or on the intrigues of earthly magnetism. Angry submariners demanded to punish the perpetrators. So the comedy was played out in court, meaningless in its essence, because the specific culprits were never found. But, perhaps, in the

future, the designers corrected the mistakes made and the Nazi underwater aces finally received a reliable weapon? Not at all ... The same Admiral Doenitz, after the war, tried to justify himself to his descendants, referring to the Americans: they supposedly had no less problems with torpedoes. Indeed, the American Mk-14 torpedo with a proximity fuse quite often failed. Moreover, there were cases when a torpedo circulated and hit the boat that fired it.

There is nothing incredible in the coincidence of defects in German and American torpedoes. Especially when you consider the complexity of technology and its high cost. For example, the Mk-14 torpedo cost more than 10 thousand dollars, and even such a rich organization as the US Navy Main Artillery Directorate could not afford a large number of tests in conditions close to combat. It is noteworthy that in the

United States, as in Germany, there were no specific culprits. Someone saved at the expense of quality, someone introduced it into production prematurely, someone accepted it without proper verification, etc., etc. And as a result - shooting with “wooden blanks”.

Here is what Rear Admiral M. Yarosevich, a participant in the Great Patriotic War, writes:

> “To the Commander-in-Chief of the Navy Berlin April 9, 1942 Top secret. (By addresses according to the list.) On the subject: Investigation of malfunctions in torpedoes.
>
> As the officer corps knows, in the first months of the war there were cases of torpedo failures, which shook the confidence in this weapon and affected the combat operations of the submarine fleet ... "

Thus began the document signed by Admiral Doenitz. Although it bears the heading "Top Secret", the admiral undoubtedly sought to notify all submariners that they finally had a reliable weapon. Further paragraphs of the document listed the identified defects. We only add that Admiral Doenitz did not even try to explain how such a gross violation of technical standards could occur in the design, testing and acceptance of torpedoes.

Now, after many years, it can be reasonably assumed that the root cause of the release of low-quality torpedoes was not the malicious intent of Admiral Vera and his engineers, but something else. This can explain the "liberalism" of the court.

Recall the background to the creation of torpedoes G7a, G7e. In the 1930s, Germany began to arm itself feverishly. The design thought of its engineers was mobilized to create the most promising types of weapons. One of them was a torpedo with a proximity fuse. However, a fundamentally new technical tool in the process of its creation gave rise to equally new problems. German engineers could not solve them within the prescribed period. It was here that someone's voluntarism manifested itself. Under the pressure of circumstances and pressure from above, low-quality fuses were adopted. Note that they still had to be removed from production - already during the war, after costly failures.

There is nothing surprising in the fact that the investigation followed a predetermined course. Its boundaries were determined by those who had no jurisdiction in "fascist Germany" and who, undoubtedly, were involved in this matter. Recall the

conclusions of the commission: 1) “The design of the fuses is incomplete, and the number of tests is not enough” ... And who pushed

it, demanded that work be accelerated? 2) “A number of people in the Experimental Institute of Torpedo Weapons held positions that did not correspond to their

technical knowledge.” 3) “The preparation of torpedoes for delivery to the fleet at the Torpedo Department of the Kiel Shipyard and at the test site of the Experimental Institute was in an unsatisfactory state.” And what was the state of acceptance of these torpedoes by the fleet?

It is useless to look for answers to these important questions in official documents

"... In conclusion, let's say a few words about the Mk-14 torpedo. Yes, its fuses were also useless. For a long time, the Main Artillery Directorate of the US Navy left numerous complaints of submariners unanswered. Then a scandal arose. It was like this: After the Tinosa submarine fired 10 torpedoes at the Japanese tanker Tonan Maru, American acoustics detected 8 hits on the side of the target, but not a single explosion followed. convincingly confirmed the fact that fuses are unreliable.

Began epic dodelok and improvements. They changed parts, tested the technology - everything is useless. On June 24, 1943, the commander of the US Pacific Fleet, Admiral Nimitz, lost patience. He ordered the proximity fuses to be removed from the torpedoes and replaced with improved contact fuses. The Main Artillery Directorate expressed bewilderment about this, but Nimitz remained adamant. However, the proximity fuse was removed from the armament of all American submarines only in March 1944, when attempts to bring it failed.

But the Americans at that time were in a much more advantageous position than submariners of the Third Reich - a country forced to wage war on two fronts.

... Such is the distance between the conceived and the executed in practice. In ideas, neither the Fuhrer himself, nor his inner circle, have ever experienced a lack of ideas. And the worse things were at the front, the more fantastic they became.

Stronghold of the Fourth Reich

The closer the Second World War came to an end, the more often the thought flashed through the Nazi bosses: this time it did not work out. We must lay low, wait until the storm subsides, raised by the collision of two ramparts - Soviet and allied (oh, in the Third Reich they were well aware that relations between the forces of East and West were far from ideal!). And when everything calms down, gather the remaining strength and start again all over again. You look, yes the fourth Reich will establish its domination over the

world. Moreover, they tried to move from words to deeds. The story of the sinking of perfectly serviceable boats near the island of Rügen is just one of the facts testifying to such preparation. There were

others ... More than twenty years ago, the adventure novel by L. D. Platov "The Secret Fairway" was published. In my opinion, this is one of the best books of this genre about the Second World War. In it, the author brought together almost all the information known by that time about the secrets of the Third Reich, the preparations for the Third World War.

Since Leonid Dmitrievich's book is unlikely to be preserved in libraries now - popular works have a short age, crumble, books grow old in the hands of readers - let me tell the current generation of readers, at least briefly, what it is about.

During the Great Patriotic War, the commander of a torpedo boat, Boris Shubin, managed to collide with a strange enemy submarine. She did not seek to participate in military operations, on the contrary, she avoided contact with the enemy with all her might. By the will of fate and the author, Shubin managed to visit this very boat, where he was mistaken for a downed Finnish pilot, and to find out something about her crew.

It turned out that the crew of the Flying Dutchman submarine, like the boat itself, were officially considered ... dead. The commander of the submarine, von Zwischen, skillfully took advantage of the unsuccessful attack of the Soviet ships, threw a little solarium from the tanks, some pre-prepared debris to the surface and ensured that his crew, like the boat, were officially considered dead since 1943.

And the boat itself, which earned its nickname for the ability to appear and disappear unexpectedly, began to carry out the most secret tasks of the high command. It was the crew of Tsvishen, according to Platov, who transported uranium ore from South America, heavy water from Norway, and from time to time transported mysterious passengers, whose faces even the commander himself tried not to see. It was on this ship that he was supposed to go on his last

journey of Adolf Hitler himself. Set sail and get lost somewhere in the Amazon, on a secluded farm in Paraguay, or even on the coast of Antarctica. It was for this purpose that von Zwischen became a dead man,

although under other circumstances he would have long been an admiral. “He enjoys the patronage of Canaris himself,” says one of the crew members. “After all, they studied together at the cadet school in Kiel, and you know how classmates help each other in the navy and in the army. But it's not just Canaris. I was told that back in the twenties our commander, then an unknown retired lieutenant of the fleet, was fortunate enough to render an important service to the Fuhrer. It happened at a rally. An attempt was made on the Fuhrer, but our commander covered him with his chest. A bullet destined for the Fuhrer grazed the commander's neck and damaged some muscle or nerve. This is the origin of his injury. As you can see, it's an honor. That is why the commander is entrusted with the command of a submarine like ours. He enjoys the right of a personal report to the Fuhrer!” Nevertheless, at the most crucial hour, Captain Second Rank Gerhardt von Zwischen

contemplated change.

“He will not come on a call transmitted from the Fuhrer’s office, according to the prearranged signal:“ Aufwiederseen, meine kleine, aufwiederseen! ”The doctor of the crew, who concurrently performed the duties of an informer for the Gestapo, informed his superiors. And

then he retells his conversation with von Zwisch. The
commander said:
- They call us the Fuhrer's Life Submarine. But what does it have
to do with

it? - Don't know. - By itself. How do you know? Only three people know this: me, my navigator and Adolf. Now there are four of you. But I hope you don't spill the beans?

I almost dropped my glass. How! Call the Fuhrer by name? But it was already a state crime! “Adolf, with all his

great conceit,” the commander continued calmly, “cannot be denied sharpness. Probably, the idea of the need to escape came to his mind after the defeat of our sixth army on the banks of the Volga. Of course, he believed that the possibility of a general military catastrophe was still small, say, one chance in a thousand, but this, too, must be reckoned with. In the meantime, Adolf, hiding from everyone, was considering how best to arrange his disappearance, turned up - very opportunely - this fight with the Russian in Varanger Fjord. Fate, as it were, prompted Adolf to make a decision. And he, as you know, believes in fate. You know the rest, Doctor. The "Flying Dutchman" stopped transporting degraded kings, demolition workers and future Gauleiters who did not want to attract anyone's attention in their "underwater activities". Only in the case of Mr. Counselor, for some reason, an exception was made, and this allowed us to stretch ourselves a little.

I think Charon got a bit bored at times. Do you remember mythology? The Atlantic Ocean is something like Styx, in the role of the carrier of Charon I am. The "Flying Dutchman" was intended for the most comfortable delivery of Adolf to the other world, to the land of silence and ghosts. - Was? Did you say it was intended? But

why "was"? - A! Did I already tell you about the map? No? So,

for your information, there is a special map hanging in Adolf's office. On it neatly - Adolf is a very neat man - the location of our submarine is marked. Adolf would like us to be closer to him in such a troubled time. And for this he has reason.

The commander straightened up and looked at me

without a smile. - Listen further. The most interesting next. Every day at the appointed hour, my radio operator goes on the air and adjusts to a certain wave. He is waiting. He patiently waits. Nothing appears on the wave, and that's good. Therefore, the "Third Reich" is still standing. But here - let's imagine such a hypothetical case - a radio operator is knocking on my cabin. “The signal has been received, Mr. Captain of the second rank,” he reports. This is the simplest conditional signal. A few bars sounded on the air. Som

the plate rotates. The popular romance of the Hamburg sailors was performed: "Auf-wiederseen, meine kleine, aufwiederseen." Doesn't it remind you: "The sky is cloudless over Spain." Then the sky was not cloudless over Spain. And now the record sounds ominous. It sounds like a death knell over Germany! It means, Doctor, that everything is dead, the "Third Reich" collapsed, and Adolf gets out of his bunker on all fours. He calls for my help! I must drop everything, whatever I do, wherever I am, and go at full speed to the nearest Vineta - a secret base on the coast of Germany. There, Adolf, Eve, two or three bodyguards will descend into the hatch of our submarine. The compartments of the Flying Dutchman are all that Adolf has left of his empire! Then dive, full speed ahead, heading west. Amazon! .. Please note: the radio operator who received the signal does not know its secret meaning. Only we know: Adolf, Wenzel, me and you. Now you too! - He kindly turned to me with his whole body: - You see, Adolf would like to temporarily dissolve in the twilight of tropical forests. Churchill was about to evacuate to Canada in 1940. Why shouldn't Adolf take refuge on the same continent, but further south, with his countrymen, in Brazil? He would like, like us, to play dead. The "Third Reich" collapsed, the Russians on the streets of Berlin, but in reserve with Adolf "Flying Dutchman". As long as the Flying Dutchman exists, all is not lost.

He brought his face close to mine: - The signal

"Aufwiederzeen" will be received, do not hesitate! But will I understand it, here what's the question! After all, I can snell. -

How is it - snelsonit? “I

mean the spyglass and the admiral's gouged eye. Forgot this joke? I started. I remembered how

Nelson had received an order he didn't want to carry out. Putting a telescope to his gouged eye, he said: “I don’t see a signal! Continue the same maneuver!

“But you, I notice, flinch every time I say “Hitler” or “Adolf.” All right, for your sake - because you are my guest - I will call him "the Fuhrer." I'll explain to you why I want to snell. He leaned back in his chair. “You see, I’m tired of taking orders. In the eyes of these high-ranking gentlemen who did not even bother to promote me, my Flying Dutchman is just a submarine. Error! And I reject another order. I make my own decision. Here it is: do not take the Fuhrer on board! - Apparently, enjoying the expression on my face, the commander repeated, savoring every word: - Yes, do not take the Fuhrer on board! Then he carefully poured some wine into my glass. “This idea is new to you, of course,” the commander said in a soothing tone. Gradually you will get used to it. The signal, I think, will sound tomorrow or the day after tomorrow. But that's useless. The Fuhrer is useless alive. Dead, perhaps still useful.

What is the use of a corpse? I asked confused. Although, they say, Buchenwald and Auschwitz...

- Not that, no. A genius, even without a higher education, is good for something else. Fuhrer what is needed is not Eve, but Saint Helena. The halo of a martyr will suit him.

Do you mean imprisonment? Mussolini has already been in prison. - And

in vain ran away from there. Skorzeny, of course, is clever, but stupid. Mussolini would have looked much better in captivity, so to speak, crouched at the feet of Napoleon, than on the gallows, and even hung upside down. I wish the Fuhrer imprisonment! To become a martyr is the best thing he can do for the benefit of the common cause.

“But he took care to deliver the luggage in advance. - The voice of the commander reached me, as through a tightly closed hatch.

- Trunks. Five trunks. Don't pretend you haven't seen them! you were at the pier during loading. -

What's in those trunks?

In them, according to Platov, there should be a personal archive of the Fuhrer. Here von Zwischen was going to give it to the Americans in exchange for his freedom.

“In the trunks,” he continued, “along with lists and excerpts printed for the Fuhrer, there are also: excellent palace coups, blinding explosions, instant photographs taken from around the corner (kill like bullets), originals of imprudently issued receipts and masterfully completed

fakes that were (or will be!) planted in enemy reconnaissance through helpful neutral reconnaissance. After all, another ruined reputation is worth the explosion of a military facility, isn't it? There is a wardrobe trunk, which I would call a drain of mucus and sewage.

It would be necessary to get acquainted with its contents, doctor, after putting on the gloves of a scavenger. This wardrobe trunk contains dossiers on some political figures in Europe, America and Asia. Attached to separate dossiers are bills from restaurants or doctor's prescriptions, no doubt not to be made public.

Some of these politicians have not yet turned around, have not yet entered into their full strength. But that's not a problem. Documents are kept in reserve. And the leader, walking around the streets, does not know that someone has already put his fingers on his throat and can at any
moment to press - so, a little, in order to warn.

There are also lists of figures whom I would call: "Vineta people". These receipts and prescriptions have already been presented. For the time being, the "Vineta people" are mothballed and hid. But it is worth giving an almost silent command, and ...

“Consider it my whim,” he said, “but I want you, doctor, to understand the scope of the sabotage planned for the period “after the war.” Here is one of them for you. It's called "Down!". The world has never seen such unique in design and scale operations. I, doctor, am asking for praise. It was I who gave the idea about the operation "To the bottom!". "My Fuehrer!

- I said, finishing my last report. - Why not apply some of the Flying Dutchman tactics to the "Third Reich"? But, of course, on a grandiose scale worthy of you! “I don't understand,” he said. “Put the whole of Germany on the ground! - I said. – Of course, temporarily. Until the danger passes. Occasionally, you could raise the periscope and look around: isn't it time to surface already?

- And the Fuhrer took your advice? - As you can see. I

told you: he is a brilliant plagiarist. And besides, a born pretender. I assure you: he knew about the negotiations of the rogue in the pince-nez with Bernadotte! Poor Himmler thought he was fooling his Fuhrer, in fact the Fuhrer was fooling his Faithful Heinrich. The Führer could not help liking the idea of hiding. The Germans now need to hide, freeze. Two oncoming shafts will roll over their heads with a roar, collide and ... But the Germans will survive, dutifully pulling their heads into their shoulders. They will remain in a crouched position until they are served

the command to straighten up.

- Who will give the command?

- The Fuhrer wanted to submit it himself. Until then, Germany must pretend to be dead, like its Fuhrer. As soon as the plan "To the bottom!" comes into effect, the military factories will silently sink underground. However, people will continue to work. They will forge weapons like dwarves in their caves. Germany under the heel of the enemy is a country of gnomes, shadows, invisible! The magical transformation will last for a long time, a number of years, perhaps decades. Yes, the country of werewolves… Lowered eyes, a sliding fox step, subservience and evasiveness in manners. And archives are stored in the most reliable caches. All military personnel are accounted for, file cabinets are in perfect order. The country is divided into underground military districts. Operating side by side for a number of years, the various groups of werewolves know nothing of each other. A system of mutually insulated compartments, like on a submarine. ABOUT! The Fuhrer took into account our experience to the smallest detail. There is even a paragraph in the plan about "cash cows." - American trusts and banks will be these cash cows. They will supply Germany lying on the ground with everything necessary. All Germany, doctor, will turn into Vineta! The due time will pass, and it will again emerge from the

bottom, obedient to the call of the pipes. Not to the sound of Christmas bells! To the formidable music of Wagner! Pipes, pipes! Flight of the Valkyries! No wonder Wagner's "Ride of the Valkyries" became the march of our long-range bomber aviation. The commander blinked. - Silent water surface, and smoke spreads over it. Here is the lingering call of the trumpet! The water churned. And cities began to rise to the surface from the foam. First, bell towers, factory chimneys, and radio antenna masts surfaced. Then crests of red roofs and treetops appeared. The country slowly surfaced, and immediately

thick yellow smoke hung over the factories, and planes rose from the drying landing sites and circled in flocks in the air. He opened his
eyes. Their cold brilliance was like headlights suddenly flashing in the darkness. - Yes! It's Germany,
doctor! Our Germany is with you! Fourth Reich!

* * *

Having dealt with the scammer-doctor, the rogue Tsvishen went around everyone. According to Platov, his last radiogram, in which he announced that he would put the submarine on the bottom of Vineta, and he himself would make his way to the west on land, was a lie, another misinformation. Tsvishen remained
true to himself. He lay down on another secret base of Vineta-5 and waited there until the dust settled by the explosions of the Second World War on the ruins of the Third Reich. And then he chose his new owners. He made a bet on Germany. The West German mark rose again in value, and there was no point in running across the ocean.

In the winter of 1951/52, Hitler's personal archive was already behind seven locks, in reliable steel safes. Could the former owner of wardrobe trunks have imagined that everything would suddenly turn out so strangely?

His luggage is loaded. The plane is ready. Callsigns with the correct intervals go on the air. The last passenger is waiting - under Russian bombs and shells that are raining down on Berlin. The sea is silent. Perhaps the "Flying Dutchman" was sunk, blown up by a mine? .. It was April 30th. Hitler, grimacing in disgust, examined the vial of
poison. Dog food, he thought. True, Blondie died immediately, which was comforting. And the poison was repeatedly tested this winter on prisoners in concentration camps, so as not to be mistaken in the dose. It's time! It is necessary to make an effort and imagine that this is just a new medicine that instantly relieves all diseases. The Flying Dutchman still stubbornly did not respond. And then Hitler reluctantly put
an ampoule in his mouth ... This is how the writer imagined the development of events at the end of World War II. Well, what
do historical sources say about this? First of all, let's turn to the secrets of the death of "Nazi No. 1" - Adolf Hitler and "Nazi No. 2" - Martin Bormann. Von
Zwischen was right when he said there was no point in saving Hitler. And not only because a trail of odiousness trailed
behind him. The Fuhrer would simply not have lasted long, because by the end of the war he had turned into a real ruin. Here's what eyewitnesses say about it.

> “There is little doubt that Hitler suffered from a form of Parkinson's disease in the 1940s, although his symptoms are not entirely characteristic of this disease,” writes renowned Western historian Hugh Thomas. - By the end of 1942, the deterioration of his condition progressed very quickly; in most cases, the disease proceeds much more slowly ... "

Parkinson's disease is known to be a disease of the nervous system. About a third of severe cases eventually manifest themselves as insidious dementia, and about half suffer from depression - a good example of this is former US President Ronald Reagan.

We cannot examine Hitler as one examines living patients, but we have newsreel footage and photographs. We also have the testimonies of his doctors and those who knew him well and, although they had no medical education, recorded their shock at his physical degradation. Toward the end of the war, German newsreels were only
allowed to film Hitler from certain angles. Both he and Goebbels were well aware that the evidence of Hitler's growing infirmity destroyed the myth about him. In the last months of Hitler's stay in the Berlin bunker, he was deliberately hardly filmed for newsreel. However

less and in these few shots, the immobility of the spine, stoop, difficulty walking, slowness, problems with coordination of movements, a frozen mask of the face, a fixed look, hands in pockets are visible - all this served as clear evidence of a neurological disease.

Historian Joachim Fest quotes the testimony of an elderly staff officer who knew Hitler for a long time:

> "Physically, he was a terrifying sight: he dragged himself painfully and clumsily, stretching his torso forward and pulling his legs after him as he moved from the living rooms to the conference room. He lost his sense of balance: making this short transition (25-30 meters), he was forced to sit down on one of the benches that were installed there for this purpose, or hung on his interlocutor. His eyes were bloodshot, and although all the documents for him were typed on special "Fuhrer typewriters", where the type was three times larger than usual, he could read them only with a magnifying glass. Saliva came out of the corners of his mouth."

Gestapo officer Werner Best, who saw Hitler in the Wolf's Lair in July 1944, found that he was "so hunched over, as if bowing." By December 28, 1944, General Johannes Blaskowitz noted, "Hitler's left shoulder is noticeably drooping, and his left arm is crooked so that it does not work." Nevertheless,

in moments of acute stress, Hitler was able to use this hand, as evidenced by a photograph showing Hitler shaking hands with Mussolini with his left hand - this was immediately after the bombing of the conspiracy in July 1944, when his right hand was temporarily not functioning. . Although it was not so badly damaged, serious concerns arose in terms of its functions: Hitler's signature became so illegible that, starting in December 1944, a special civil servant was called in to forge the Fuhrer's signature. Several witnesses recall that Hitler used to press his left foot against the leg of the table to keep it from trembling,

and to hold his trembling left hand with his right, pressing it against his body.

In the light of subsequent events, it is symptomatic that, as early as March 1944, witnesses describe how Hitler had to be helped to sit down at his desk, how difficult it was for him to sit on the sofa in his room, and how his legs were raised when he wanted to lie down. Hitler's left leg would spontaneously twitch as he lay down. Speer recalls that the benches around the bunker were set at hip level because Hitler's valet, Heinz Linge, complained that it was difficult for him to lift the Fuhrer from the low benches.

Captain Peter Hartmann was a young officer who had served in Hitler's guards long enough to learn the Führer's habits and appearance well. The process of decrepitude that Hartman saw could be the result of progressive Parkinson's disease or simply aging.

> "We all knew that he was fifty-five years old, and those of us who knew him in earlier years, before the war, when he was just a dynamo man, exploding from excess energy, noticed that since 1942 he was getting older every year. for at least five years. Just before the end, on the day he celebrated his last birthday (April 20, 1945), he looked more like seventy than fifty-five. He looked, I would say, physically decrepit. This man lived on nerves
>
> dubious medicines, wasting his will.

If the deterioration of Hitler's physical condition was obvious to his followers, then what about the doctors?.. Professor Werner Haase was a physician to the staff of the Imperial Chancellery as early as 1933, due to his seniority, he was called in the last weeks in the bunker to observe Hitler. He was appalled at Hitler's condition:

> "I knew, of course, that this was Adolf Hitler, and not his double. He was without a cap, in his usual, once impeccably clean gray jacket, green shirt and black trousers, in a simple uniform that he had worn since the first day of the war. A gold party badge and the Iron Cross of the First World War were visible on the left chest pocket. But the person wrapped up in those wet, food-stained clothes was a different person. I stood at attention a step away from him, one step higher. When I looked down, I saw Hitler's hunched back, his drooping shoulders that seemed to twitch and tremble. It was as if his head, like a turtle's, was hidden between his shoulders. I thought he looked like Atlas holding a mountain on his back. These thoughts raced through my mind in about thirty seconds, no more. The pause arose from the fact that Hitler could not cope with two sheets of paper on which his greeting to us was written.
>
> His eyes, although he was looking straight at me, could not focus. They looked like pale blue porcelain, dull, more gray than blue. They were covered with a film similar to the skin of grapes. Proteins are filled with blood. On his languid, motionless face, I could not discern any expression. Heavy black bags under his eyes betrayed constant insomnia, although Hitler was not the only person in the bunker who suffered from this ailment.
>
> Now (in the 1970s) I can still see him, even though the whole scene took only four, maybe five minutes. Deep folds ran from his fleshy, rather large nose to the corners of his mouth. The mouth was tightly compressed, lips nervously closed. His handshake, cold as a fish and sluggish, was indifferent. It was some kind of convulsive reflex, although friendliness was supposed. When he murmured his gratitude unintelligibly, I was unable to answer him something intelligible. Then he apologized for calling us at such a late hour. I should have muttered something trivial, probably "thank you, my Fuhrer." I was really shocked and reacted, I suppose, as any
>
> doctor would react, not without sympathy. However, it was already too late: no mortal doctor could do anything. At fifty-six, the Fuhrer was a paralyzed, physically destroyed man with a wrinkled face, like a mask, all yellow and gray. I was convinced that this man was completely decrepit."

Judging by the evidence available to us, it is clear that Hitler's physical degradation became quite noticeable in the last two years of the war. And yet, although he was clearly completely incapacitated, Hitler remained in power - but in isolation, absolutely necessary so that his condition would not be

revealed. Goering and Himmler, as well as some others, did not want a change in leader, since they derived certain benefits from his weakness. Himmler had long been asking his doctors, Dr. Karl Brandt and Professor Karl Gebhardt, about the true nature of Hitler's illness. Hitler was clearly

obsessed with the problem of syphilis—almost a whole chapter in Mein Kampf is devoted to the subject—and when, in the early 1930s, Dr. not diplomas or certificates, but autographed photographs of his clients - film actors and other celebrities who were helped by his treatment - Himmler was more than interested.

His first investigations revealed that Hitler's mother gave birth to dead children twice, which medically suggests possible congenital syphilis. Such syphilis sometimes has external manifestations, although nothing of the kind was observed in Hitler, but this did not satisfy Himmler's curiosity. When Hitler began to develop

symptoms of neuralgia - stiffness when walking and standing up, shaking - Himmler's interest flared up again, and he took up new investigations into the life of Hitler during his youth, when he was a wanderer in Vienna and his not too exemplary lifestyle could expose his risk of catching syphilis from prostitutes. Himmler's detectives obtained the results of blood tests done by Dr. Morell in 1936, especially serological tests for previous diseases.

syphilis. These blood tests became the basis for all subsequent rumors and intrigues.

Congenital syphilis can manifest itself in an adult who inherited it, but its symptoms are characteristic and easy to recognize. There is no evidence that Hitler exhibited such symptoms. Acquired syphilis through direct sexual contact, however, was of great concern to Hitler's doctors, and this possibility had to be ruled out by an accurate diagnosis of Hitler's disease.

Before the invention of sulfa antibacterial drugs (in the 1930s-1940s) and the era of antibiotics, acquired syphilis developed in the usual way, and sometimes the patient's condition improved due to treatment with antimony and the like, but in most cases the disease left its marks on the genitals and in a terrible legacy - later it was called "general paralysis of the mind." If Hitler contracted non-inherited syphilis as a young man in Vienna, then twenty years later—around the early 1930s—he fell prey to late symptoms of the disease.

In general, one way or another, Hitler's condition was such that there was no way to save him no point. All he had to do was die. But how did he die?

It is generally believed that Hitler poisoned Eva Braun and poisoned himself with potassium cyanide. But then the question immediately arises: was he able to do this? How could he force Eve to take poison if he was so physically weak? Did he have the guts to crack open the glass capsule? There is currently a

significant amount of conflicting evidence about how Hitler and Eva Braun died. Some of them are quite confusing, others repeat each other, and there are very few that you can rely on!

"Everyone who undertakes such an investigation is soon confronted with one essential fact - the futility of human evidence." So wrote Hugh Trevor-Roper, the British spy commissioned by the British government to carry out the first investigation into the Führer's death in order to muffle Stalin's paranoid claims that the Western Allies had somehow conspired with Hitler and allowed him to escape. Trevor-Roper's remark about the "worthlessness of human evidence" is interesting because it reflects his disappointment that despite

the fact that the British searched the POW camps for witnesses, nevertheless, he received very little information, in addition, from very few sources.

His book "The Last Days of Hitler" is striking in the paucity of material, despite the fact that its author worked in close cooperation with British intelligence and counterintelligence, had access to a copy of the diary of Hitler's movements, which was kept by his valet Heinz Linge. This diary was secretly shown to him by an intelligence officer, Colonel John McCowan, on the orders of Dick White, who was then head of British intelligence in Berlin.

Interestingly, the original testimony collected by Trevor-Roper - and he had a list of people who remained in the Imperial bunker until the very end - was not published. The book gives only a brief analysis of them and a description of the farewell ceremony for Hitler and his newly-minted wife with members of the Nazi headquarters:

> “Hitler and Eva Braun shook hands with each and returned to their quarters. After that, some of those present were released, except for the high priests and those whose help might be needed. They were waiting in the corridor. The sound of a gunshot reached them. After waiting for some time, they entered the room. Hitler lay on a couch covered in blood. He shot himself in the mouth. Eva Braun was also lying on the couch, dead. A revolver lay next to her, but she did not use it - she took poison. It was half past four."

As you can see, the British intelligence officer insists that Hitler shot himself. However, the understatement of the book, the vagueness of many of Trevor-Roper's expressions, made their significant contribution to the vitality of the Hitler myth that the ghostly Fuhrer survived and waits, spreading his wings, to return.

Not by chance, not believing Western sources, I. V. Stalin ordered his own investigation into the circumstances of the death of the Fuhrer. Fortunately, after the war, the bunker ended up in the Soviet zone of occupation of Berlin.

The investigation was carried out in complete secrecy. Stalin ordered even to ignore the official request of the Americans in this regard. Only relatively recently did the first evidence of direct participants in this investigation appear in the press. So, in 1965, the translator Elena Rzhevskaya published an article on those events in the Znamya magazine. Then Rzhevskaya expanded this article to the size of a book, in which she described how, as an interpreter for one of the Soviet military units, at the end of the war she received the task of finding Hitler dead or alive. Her book contains links to several documents. Soon, Lev Bezymensky, a member of the editorial board of the journal Novoye Vremya, published the documents themselves. And his book "The Death of Adolf Hitler" was published in West Germany, and then in England. So the Soviet authorities for the first time officially recognized that

Hitler was dead. At the end of the summer of 1945, Stalin ordered that a

special report on Hitler's death be presented to him. The responsibility for this report was given to General Kobulov of the NKVD (he was subsequently shot along with Beria). The report was prepared and sent to the then Minister of the Interior Kruglov on January 19, 1946. The chief commander, who was in charge of the affairs of prisoners of war in the NKVD, gave this operation the rather defiant name "Myth". In a new study, the security officers wanted to eradicate Stalin's dissatisfaction

with the SMERSH report presented to him by Abakumov. He firmly stood by the fact that the first pathological examinations, of course, confirmed that the corpse of the Fuhrer was indeed found in the funnel near the Reich Chancellery, although the experts did not establish the cause of death.

However, General Serov, on the other hand, accused SMERSH investigators of incompetence. The materials presented by him show that Serov wanted to play along with Stalin, who was sure that a posthumous forgery had been committed in Berlin - they burned the corpse of another person, Hitler's double, and the Fuhrer himself managed to escape.

Serov knew that the Soviet experts, headed by the Moscow pathologist Professor Semenovsky, now advising Stalin, firmly established that cyanide poisoning did not take place, that the cyanide ampoules were forgeries. Stalin considered this proof that the corpse was not Hitler's, but the NKVD still wanted to find out how the man whose corpse had been found in the bunker had died. The only evidence that would satisfy

Stalin and convince him that the corpse belonged to Hitler would be evidence that death was the result of a bullet wound: the leader of all peoples did not even think that such a person as Hitler, a leader who managed to outwit Stalin himself , could have died in some other, less dignified way. And Serov went into all serious trouble. As part of the colossal investigation undertaken by the

NKVD, task forces in every major German city that came under Soviet control after the war began to look for evidence of doubles known to the local population. And the Chekists soon discovered something.

The task force in the city of Bernau received information about a certain Gustav Wöhler, who was very similar to the Fuhrer. Until 1944 he lived in Berlin. He was repeatedly summoned by the Gestapo and offered to change his hairstyle and shave off his mustache. The NKVD found out that Himmler personally summoned Wöhler and warned him: "If you continue to comb your hair like the Fuhrer, you will disappear forever."

The NKVD tried to find traces of Wehler and interrogated the Gestapo officers involved in this case. In the reports of the NKVD there was a photograph of Wehler. He looked a lot like Hitler on it. It was

impossible to link the living Wöhler with the dead Fuhrer, but scrupulous interrogations by the Gestapo officers "confirmed that the doubles existed and the Gestapo knew about them." These reports from Berlin forced Soviet officials to change their attitude towards

the inhabitants of the bunker captured

by them. The NKVD was now preparing for "active interrogations". The head of the Butyrskaya prison was ordered to equip cells for two, well isolated from each other. One of these two was supposed to be an NKVD agent. The head of the prison was also to prepare the necessary number of rooms for interrogations and provide "special measures" for the observation of the arrested, their protection and escort.

From the Moscow camps where prisoners of war were kept, eight prisoners were selected - those who served in the bunker to the very end, including the Fuhrer's valet Linge and his assistant Baur. The interrogation protocols, which lasted eight to nine hours and took place mostly at night, are absent from the files, they are replaced by notes. Nevertheless, it can be established that Linge and Baur were not allowed to sleep during the day, they were dressed in torn rags, which aggravated their horror. It appears from the

documents that Linge was not trusted. When he was captured, he gave dubious evidence that he had prepared one blanket in advance to wrap the corpse in, and placed this blanket in the corridor outside Hitler's room in anticipation of his suicide. How could it be, the Soviet investigators asked, when should there have been two suicides? With such commendable foresight, would it be necessary to prepare two blankets?!

Moreover, although Linge was writhing in fear, cold and hunger, he told his cellmate (an NKVD agent, a German named Bemen) that he would never split and therefore he could not be accused of lying, because only Martin Bormann and he knew the truth ! Nevertheless, the investigators were sure

that he was lying and that he had deliberately sent the second valet out of Hitler's office at the last minute so that he, Linge, would "get rid of the witness." In all of Linge's testimony to the Soviet interrogators, he never mentioned any smell like cyanide, only a pungent haze, which they did not believe could be smelled through a closed door that did not let in smells.

The arrogance of the Soviet investigators who interrogated Linge about the bullet wound on Hitler’s temple, forced him, after returning to the cell, to confess to Boehmen:

> “They asked me about the bullet hole and if there were traces of blood on the clothes. I replied that I had noticed a blood stain on the right temple - a red spot - no larger than three postage stamps. I didn't know if it was really a wound from
> bullets - they could draw this red spot ... "

How could Linge, allegedly the last person to see Hitler alive and the first to see his corpse, even suggest that the bullet wound could have been painted by someone? This is a very strange statement, and one of many similar ones. It is also interesting that the "little drop of blood" on the temple was enlarged to the size of three postage stamps to satisfy the interrogators, and that in the initial testimony, Linge claimed to have seen blood on the left temple. In general, the Soviet investigators got what they

wanted. But are they closer to the truth? From Linge's testimony, it becomes clear that Soviet

investigators suspected that if there was a shot that ended Hitler, then the valet himself shot. And it may well be that they were right in their assumptions. Linge really killed the Fuhrer. Only he didn’t shoot him, but simply strangled him ... This is how the last hours of the Fuhrer’s life are seen in the light of recent investigations.

The SS guards unnecessarily loudly slammed the heavy steel doors at the entrance to

the bunker - everyone was in a gloomy and nervous mood. There were alarming reports about how the Ivanov offensive was progressing: now they were already at the Stadgmitte metro station, just 200 meters from the bunker, it was not safe to go out into the garden of the Imperial Chancellery. SS General Ratgenhuber kept in contact all morning with Bormann and Stumpfegger, with whom he had a long

secret meeting. The rest of the time, Ratgenhuber, with a blackened face, angrily lectured the members of his headquarters in the bunkers of the office -

lamented the lack of discipline, but refrained from taking measures to strengthen it, fearing that this might lead to the fact that everything would collapse altogether. Frightened

Goebbels, who knew what Rattenhuber and Bormann were talking about, tried to take refuge in his room, reading one of the two books left on his empty table.

We can imagine how a shambling Hitler came to talk to Goebbels, who almost directly told him that it was all over: watery eyes, but still full of demonic power, a red face, with traces of tears, a trickle of saliva stretches from the corner of the mouth. He convulsively throws forward a clenched fist, while his movements are not synchronous, when he beats the air with his fist, repeating: “Treason, betrayal”, threatens with retribution to those who betrayed him ...

Goebbels, with empty eyes, withered mouth, exhausted, watches as Hitler hobbles from wall to wall, excitedly waving a sheaf of papers, which one after another slip out of his hands and, fluttering, fall on the table or on the floor. Goebbels tries to cheer up the Fuhrer, but his dead face reflects the fear on Hitler's face. So half an hour passes - they seem like an eternity.

Bormann is talking on the phone with Rattenhuber in a muffled voice. His shoulders are tense, his elbows are extended as if he wants to cover the telephone receiver with them, to make the sound even quieter. Stumpfegger, gloomily sipping whiskey from a urinalysis glass, looks displeasedly at his short companion, looming over the table.

A message comes from Ruttenhuber by phone: all personnel, with the exception of designated persons, must immediately leave the lower bunker and not go there until further orders. Everyone is to stay in the upper bunker or in the passage to the Imperial Chancellery until further instructions come in. The murmur of excited voices ceases as soon as three SS men appear from the top floor to carry out the order. The secretaries - some of them drinking, others sleeping or playing cards - hurry to leave, complaining about the lack of any information.

In the hallway, Linge insists that his deputy Krueger, whose duty is to continue for another two hours, hand over his shift; Kruger's protest is abruptly cut off by Bormann. Sticking his head out of his room, he angrily waves at Krueger to get out and orders Linge to get down to business, and no fuss. Krueger walks out the door, up the stairs and out of sight.

Returning to the corridor to the door of Hitler's room, Linge hurriedly talks to Bormann and takes a blanket from under the bench and folds it on a chair in the corridor. He knocks on the door and enters the living room - there he finds Eva fainting, her head thrown back on the back of the sofa, blood from her wrist dripping onto the sofa handle. Linge hurriedly wraps the hem of her dress around her bleeding wrist and takes her in his arms. The nearest room is Hitler's bedroom, and when Linge stops to open the door there, blood drips onto the floor. After that, he rather unceremoniously throws Eve onto the bed, where her arm falls helplessly along the body, and hurries down the hallway in search of Stumpfegger to tell him that Eve tried to kill herself.

Stumpfegger curses, puts down his glass and grabs a bottle of whiskey. Throwing back his head, he takes a long gulp and, holding the bottle in his hand, follows Linge into the bedroom to look cynically at the still fainting Eva. He stares at her wrist without much interest, then drains the bottle, drops it on the floor, kicks her under the bed, and kneels to stop the bleeding. Linge hurries to Stumpfegger's office to get clothes and bandages for Eve, when Bormann grabs him to find out what's going on. Hitler, hearing footsteps, leaves the Goebbels room and shouts angrily, demanding an explanation. But no one is in a hurry to reassure him, the SS guards have already left the lower bunker, like most of its inhabitants. Hitler gets scared, suspecting something is wrong.

He is still hobbling towards his room when Linge returns. When asked by Hitler what is happening, Linge replies that Eva opened her veins, and offers the Fuhrer an ampoule of potassium cyanide from a small copper box and an army pistol, which he takes out of table drawer.

Glancing blankly at his valet, Hitler calls him a "stupid redneck" and turns his back on him. Then Linge takes an ampoule of cyanide and from behind tries to put it into Hitler's mouth, squeezing Hitler's jaws with his strong fingers so that he opens his mouth. Despite his weakness, Hitler manages to break free of Linge's grip and lower his head. Now all the efforts of Linge lead to nothing. But the insult has already been done, the first act of violence has been committed. Enraged, Linge

turns this prematurely aged man back to himself and begins to choke him. Terrified, he holds the Fuhrer in front of him until saliva stops flowing from his mouth and

he doesn't quiet down.

Linge is still holding the corpse when Stumpfegger enters the room, having left Eve moaning plaintively but loudly enough in the bedroom. Stumpfegger orders Linge to put the corpse on the floor. Convinced that Hitler is dead, Stumpfegger takes out tongs for breaking ampoules from his pocket. He deftly and professionally crushes the ampoule under Hitler's protruding tongue.

Stumpfegger goes out into the corridor and orders the SS guards to bring the corpse, lying outside the doors of the bunker, and now brought to the guards' dressing room and unceremoniously thrown there. The SS men bring him to Eva's room, where her blue dress is unbuttoned on the back on the bed. The corpse is squeezed into a dress, and the head is covered with the same blanket that the SS used when they dragged the woman's corpse here. The fake Eve is placed next

to Hitler, who is lying on a blanket. His face, red with indignation, is left partly uncovered as proof that the end has finally come. And when Eva woke up from her hysterical state, she was informed that Hitler had

committed suicide. She's hardly aware of what's going on as she climbs up the back stairs. The nauseating smell of potassium cyanide filled the entire room. But back to Linga. He opens the door after "discovering" the "double suicide" and saying the cryptic words to Bormann: "It's done, minister." After that, he

runs with a frustrated look up the stairs to the top floor and on to the Imperial Chancellery, shouting the startling news: "The Fuhrer is dead!" When Linge is at the massive door, the figure of one of Constance's cooks leans out of the kitchen and asks: "What about Eva, Heinz?" Linge stares blankly at her for a while before opening the door and bursting into the SS bunker, continuing to yell "The Führer is dead!" Talk among the bunker's staff died away as Rattenhuber appeared, looking shaken by the news. Another pragmatist, Baur, avoided all talk and did not want to listen to the rumors that were being circulated. Axmann went down to the lower bunker and joined the chorus with Linge: Hitler died a

dignified death, he died like an officer and a gentleman by shooting himself and taking poison. As for Eve, it is likely that she manages to escape. Where she hid and what eventually became of her, her brother, Wernher von Braun, probably knew. But he knew how to keep secrets. Perhaps she disappeared at the same time as Martin Bormann, about the "afterlife"

which was generally legendary.

Remember the glorious "Seventeen Moments of Spring". Why do you think Stirlitz goes to the very top of the Third Reich not on anyone, but on Martin Bormann - Nazi number two, Hitler's deputy for party affairs? They say, because Bormann, along with Stirlitz, was also ... an agent of Soviet intelligence! You can, of course, refer to the rich imagination of Yulian

Semenov. However, reality is often more abruptly than the most dashing scenario "bells and whistles". Moreover, it seems that, making another plot move, the same Y. Semenov relied not only on his own imagination, but also on some archival materials. It's no secret to anyone now that he was a member of the archives of the KGB of the USSR. However, we can learn something without their help. A couple of years ago, a book

was published in the UK about how a boss

Hitler's party office, Martin Bormann fled Berlin, lived quietly to 89 in a small English village and died just a few years ago. The author of the book, hiding under the pseudonym Christopher Crichton (actually his name is John Ainsworth Davis), assures readers that one of the main Nazi criminals of the Second World War, sentenced to death in absentia by the Nuremberg Tribunal, was taken out of Germany on the personal order of the Prime Minister British Minister Winston Churchill in exchange for an obligation to issue multimillion-dollar cash holdings in a Swiss bank. He claims that the plan to take Bormann to England was devised after Churchill's meeting with his personal security adviser Desmond Morton and Ian Fleming, the future James Bond

writer and then a naval intelligence officer. In accordance with this plan, a special detachment of 400 "commandos" was created. Ian Fleming led the operation, the author of the book was his deputy.

The book was published by the prestigious publishing house Simon & Schuster, who paid £500,000 for the manuscript after reading only two chapters and a synopsis. Nick Webb, director of the British branch of the publishing house, firmly believes that they got a real bestseller; he is not embarrassed by the doubts expressed by historians and other publishers. Two people support his conviction - Duff Hart-Davies, a military expert and literary editor of the book, and Milton Shulman, a theater critic and military expert, who has been trying to publish Crichton's book for more than four years.

According to the author of the bestseller, it all started with the fact that Fleming was given the task of finding out where the Nazis invested treasures looted throughout Europe. This investigation led Fleming to one of the Swiss banks, where, as the future writer managed to establish, the Nazis deposited huge sums of money.

Fleming tried to find out from the Swiss bankers whether these accounts would be opened after the war. The answer was no: without the permission of the owner in any case. Fleming, however, insisted, trying to find out who could give permission. Again, they didn't say anything intelligible to him. However, at the end of the conversation, Fleming was offered a cup of coffee. And when he lifted the cup, he saw at the bottom of the saucer a small white card with a phone number written on it. Upon returning to London, Fleming found out that the number belonged to none other than Martin Bormann.

Here the author appears on the scene - Christopher Crichton. It turns out that before the war he went to school with the son of the German ambassador to Great Britain, later Foreign Minister Joachim von Ribbentrop. It was through Ribbentrop's son that contact was made with Bormann, who agreed to give money from Swiss banks in exchange for export from Germany and freedom. A special detachment of "commandos" headed by Fleming went to Berlin, and only four people were privy to all the details of the operation - Churchill, Morton, Fleming and Crichton. The operation itself was codenamed "JB" - "James Bond".

On the way, the detachment repeatedly engaged in battle with the advanced units of the Soviet Army, losing eight people in skirmishes. But the agents still managed to get Bormann out of Hitler's bunker. Instead, they left a double, who was found in one of the camps for German prisoners of war. This man believed that he was brought to Germany for a special task, after which he would be provided with a comfortable existence, but he miscalculated and was killed in Bormann's office. Immediately after the plane landed in England,

Bormann was taken to the hospital, where he underwent plastic surgery, which, according to the book, was performed by Sir Archibald Macindo, a now well-known surgeon. Only after that Borman, according to Crichton, gave an order to the Swiss banks regarding money, and the UK received 90 percent of it.

deposits.

Despite the fact that the plot was put together according to all the laws of the genre, the path of this story to the reader was much longer than the novels of one of its participants. It all started in 1988, when Milton Schulman, bestselling author of Defeat in the West, received a response letter to a publication about the search for traces of Bormann. In it, the author of the letter asked the question: “Do you want to know how

Ian Fleming and I took Bormann out of Berlin and brought him to England?" The letter was signed: Christopher Crichton. When Crichton sent Shulman a series of written chapters and presented evidence of the authenticity of the events, Shulman approved his intention to write a book.

The next task was to get publishers interested. Shulman admits that it was extremely difficult. "I had documents: military maps belonging to the participants in the operation, letters written by Churchill and Lord Mountbatten. All this was checked for authenticity by Sogby specialists, and it was even proved that the typewriter on which the letters were typed and the paper were of that time. But the publishers weren't convinced." One of the documents was a letter from Churchill, written in 1956 in response to a letter from Crichton announcing his intention to write a book about the operation. In it, Churchill assures Crichton that the day will come when she can be told, but that is premature now.

The publishers' arguments were mainly that Crichton's book would be another one-day in a long line of stories and tales about Martin Bormann. There is evidence that Bormann has been seen in Paraguay and Argentina. A man named Henrik Lenau insisted that he had traveled with Bormann to the Danish border in 1945, and the wife of a Munich doctor who treated Bormann claimed to have seen him in Italy.

"Dead Bormann" was also repeatedly found in different places. And only in 1972 he was officially declared dead, after his jaw was found. However, not for long, because quite recently Hugh Thomas in his book "The Doubles" stated that due to a discrepancy with a number of parameters, the jaw cannot be recognized as belonging to Bormann.

Nevertheless, Crichton's version seems to be verifiable. The fact is that on the eve of Victory Day, in May last year, Crichton, as one of the participants in the war, spoke on the radio and named the story of how the British brought Bormann to England among the undisclosed mysteries of the war. Soon an unknown married couple called him, claiming that they were friends of the son of a woman who lived with Bormann, and they were also writing a book. It was a surprise, because Crichton knew nothing about Bormann's English period - not about how he met a certain Danish woman on the bus and began to court her, not about how he received a passport and turned into an engineer, and then traveled all over the world how the Dane began to live with him and gave birth to a daughter. Three graphologists who conducted a comparative analysis of letters written by Bormann and a man who lived in a remote village in 1964 confirmed that they were written by the same person.

The sensational information published in the British press that the Nazi criminal Martin Bormann lived in England until 1989 has recently received additional confirmation. The London Daily Mail published the memoirs of a certain Joan Nelson, who claims to have been the mistress of the former head of the Hitlerite Chancellery for 20 years.

> "I knew Bormann as Peter Hartley, we met by chance at a bus stop. He introduced himself as an engineer," Joan said. "I had some doubts after I once found Peter had another passport in the name of William Horngold."

Joan Nelson now lives south of London. According to her statements, Peter Hartley only once let slip that he was in fact an ally of Hitler. "It happened after Peter, who had never drunk alcohol before, drank a lot of champagne at dinner. Then he began to tell me about how he spent time with the Fuhrer and Eva Braun in a country residence. Joan Nelson also said that after the capture of Berlin, Bormann lived for some time in Paraguay, from where he then moved to South Africa. However, in South Africa, he had problems, and, becoming Peter Hartley, he managed to settle in the UK, where he died on June 27, 1989 at the age of 89. However, this is not the only version...

Martin Bormann died not in Germany, but in Argentina, and not under bombs, but from hepatitis, and not in 1945, but 30 years later. Such sensational news was published by the Argentinean newspaper "Magnana del Sur", published in the city of Bariloche. The newspaper publishes a photocopy of the Uruguayan passport of a certain Ricardo Bauer, under whose name, according to the editors, Bormann was hiding.

This passport was provided to the newspaper by, it was reported, "a man of German origin living in Chile who bought a house from Bauer-Bormann." He argues that the official version presented by the German government in 1977 that Bormann died during the bombing during the storming of Berlin by Soviet troops is not true. The passport obtained by the newspaper was issued in 1948 by the Uruguayan consulate in Genoa.

According to the author of the find, Bormann spent more than 25 years in Chile, and in 1973 he moved to Argentina, where he quietly lived out his last days. The passport, according to the newspaper, was found on an agricultural farm in Chile, which Bormann sold on the eve of his departure to Argentina.

However, not only foreign newspapermen earn on Martin Bormann. Ours too. Not so long ago, for example, there was information that the father of the leading parapsychologist, head of the International Center "Imago-Jenny" Valery Avdeev, the Soviet superintelligence officer Vasily Avdeev, was introduced in 1943 instead of the kidnapped Martin Bormann into the "holy of holies" of the upper echelon of power of the Third Reich , received a number of letters and phone calls, asking for clarification on the details of this unique operation.

Here is what Valery Avdeev himself said about this: “Father was distinguished by a number of phenomenal abilities. In addition to acting data, the ability to imitate the voice and manners of people, in addition to the gift of reincarnation, he possessed the skills of hypnosis inherited from his grandfather, a sorcerer, which he eventually developed to perfection. It was these qualities, combined with an excellent knowledge of the German language, that played a major role in the fact that at the beginning of the war he was included in the special unit that trains intelligence officers to work in the German rear.

Before the war, in 1940, he was taken to the OGPU for retraining. Since then, there has been no information about him for many years. Only two summonses came: according to one, he died, according to the other - "disappeared." Since childhood, I have been irresistibly drawn to Odessa. Many years later, when I managed to go there, I learned about my father's life after 1940. I visited the Odessa catacombs, the museum and, looking at the portraits of the underground, I saw a photograph of my father. Under it was the signature: "Vasily Avdeev, underground nickname - Chernomorsky." Museum staff told me details about his life.” Vasily Avdeev performed his first combat mission in 1942 in occupied Odessa. At the head of a group of ten people, he was abandoned with the task of restoring the Odessa underground that had been defeated as a result of betrayal. The materials of this operation are kept in the museum of Odessa. Soon the underground and all communications were fully restored. But the Gestapo tracked down the scouts. And just before returning from the mission, Avdeev-Chernomorsky was ambushed. He fired back and, realizing that he could not escape, shot himself in the head. According to the first version, he was taken unconscious to the nearest military hospital. The next morning he came to his senses and, realizing that he had been taken prisoner, committed suicide by hitting his wounded head on the corner of an iron table. So, according to one version, the life of Vasily Avdeev ended. After the war, one of the streets of Odessa was named after Avdeev-Chernomorsky. However, there is another version, according to which the remaining scouts, as a result of a daring operation, rescued their commander and safely delivered to their unit. For the purpose of secrecy, this operation was carried out without the participation of the Odessa underground.

Well, since officially he had already, they say, died, it became possible to use a super agent in another, extremely daring to the point of insanity operation - Avdeev was supposed to replace Bormann. At present, there are three versions regarding Bormann's work for the Soviet intelligence.

First: Bormann, an OGPU agent, was sent to Germany before the war and worked for Moscow all these years. Second:

Bormann, in anticipation of the collapse of Germany, made contact with Soviet intelligence in early 1943. Third: Bormann

was kidnapped and replaced by a Soviet agent at the end of March 1943. Obviously, the first

version does not withstand even superficial criticism. Before the start of the war, Bormann served as chief of staff in the apparatus of Rudolf Hess. Recall that Reichsleiter Hess was Hitler's deputy for the party and his personal secretary. Naturally, Bormann was familiar with the development of a plan for an attack on the USSR, which began actively in July 1940.

Already on July 31, Hitler, in a conversation with his inner circle, set the date for the attack - May 1941.

The first sign was General Marx's Operational Project Vostok. It is followed by Lossberg's Etude, dated September 15 and developed at the Design Bureau with the personal participation of Jodl (since 1939 - chief of staff of the operational leadership of the Wehrmacht's supreme command and Hitler's chief adviser on operational and strategic issues). And, finally, on December 18, 1940, the final version comes out of the Fuhrer's headquarters - Directive No. 21, Plan Barbarossa. Moreover, having learned about Hess's flight to England (May 10, 1941), Hitler first of all summoned Bormann to his Berghof (the Bavarian residence of the Fuhrer near the town of Berchtesgaden), and only after talking with him ordered the arrival of Goering and Ribbentrop for a meeting, held in the evening of the same day.

An interesting detail: Hess's personal adjutant, Chief Fuhrer SA Pinch (who had the rank of general) was immediately arrested, interrogated, then released, demoted to the rank and file and sent to the front in a penal company; practically the entire headquarters of Hess was arrested and disbanded; and Bormann - not only remained above suspicion, but also strengthened his position: after Hess, he inherited both the position of Reichsleiter and the post of Deputy Fuhrer for the party, and later - in 1943 - became his personal secretary and Hitler's most trusted person.

From all of the above, it follows that if Bormann had been a Soviet agent in the first version, Moscow would have had comprehensive information about the impending attack and would have taken timely response measures - which, as you know, did not happen.

The second version looks even more implausible. First, at the beginning of 1943, it was, to put it mildly, premature to talk about the collapse of Germany. Yes, the losses of the Germans during the Battle of Stalingrad were very significant. But this victory was not easy for the Soviet Army either. Yes, the Allied forces in North Africa have stepped up. But Italy still held out, Japan did not say its last word. Six months remained before the Battle of Kursk, a year and a half before the opening of the second front. No, at that time the huge military-industrial machine of the fascist Reich had far from exhausted its resources. Secondly, the owner of the secret of party gold could rather count on understanding from the allies than from Moscow. What could he claim? To save his life? Field Marshal Paulus, as you know, lived in the Moscow region until 1953, after which, already terminally ill, he was released to his homeland. But the prisoner of war Paulus is one thing, the Nazi criminal Bormann is quite another. Thirdly, why should he, having practically unlimited power and money, voluntarily give up both of them, looking for support in the camp of enemies? Wouldn't it be easier, relying on a group of reliable and devoted party comrades, to disappear from Berlin at the right time and continue your mission, leading the Nazi movement from somewhere in South America? No, Bormann was not a naive simpleton: he did not need to offer his

enemy intelligence services.

So, only the third version remains: Martin Bormann was indeed substituted
Soviet superspy. A question

of questions: are operations of this magnitude possible in principle? And what are the conditions for their success? One of the first persons of the Reich. A situation of the strictest secrecy. special living conditions. The highest level of protection. And so on and so forth. But nevertheless ... History knows several cases.

So, for example, in June 1940, the head of foreign intelligence SS Walter Schellenberg, on the direct orders of Ribbentrop, developed a plan to kidnap the Duke of Windsor himself! In his memoirs, Schellenberg devotes a whole chapter to this operation, describing the details (the kidnapping was to take place when the duke was heading from Britain to Portugal) and the goal pursued: the use of a prisoner as a German protege. As a result of the change of course in Anglo-German relations, this operation
was deemed inappropriate and was cancelled.

It is appropriate to recall the story of the double abduction of Mussolini (first by partisans, then by the SS paratroopers under the leadership of Otto Skorzeny). Relatively
recently, the Israeli secret services kidnapped and brought to their territory the Nazi criminal Eichmann, where he stood trial. This series of examples could be
continued, but something else is important for us: to kidnap - yes, it is possible! But change? After all, for this it is necessary to know everything about the object - gait, voice, habits, the immediate environment and the relationship with it, and much, much more - down to the little things of everyday life. And very little was
known about Bormann. He never appeared in the lead roles either in Deutsche Wohenschau or in Völkischer Beobachter. The Berlin film company UFA, which specializes in documentary films about the victories of the Wehrmacht, seems to have never shown it. The name of Bormann and his role were well known in the upper echelon of power, but although he was almost always present among the people of the Fuhrer's inner circle during parades and celebrations, the middle link, for the most part, did not even know who he was. It seems that a man of great influence in the Third Reich took careful measures to remain in
shadows.

Thus, the substitution operation could be carried out only under one condition: Bormann must be near, and for a sufficiently long time, an observer agent who enjoys his full confidence; a person, according to his position, who accompanies Bormann both at work and on trips, and at home. Was it possible to introduce an agent into Bormann's environment?

Yes. Namely: when, after the dispersal of Hess's headquarters, Bormann recruited new people for himself, the probability of being among the employees of his apparatus was quite high. And to move forward, to become a confidant - this is already a matter of professionalism and technology. Having gone through the NKVD school, such an agent would feel like a fish in his native element. Obviously, the period from 1941 to 1943 is more than sufficient to collect the most detailed information about Bormann.

It should be noted right away that the work of an agent-observer is fundamentally different in tasks from the work of operational intelligence: having gained confidence in the “ward”, it is advisable not to strive for career growth; not to fall under suspicion, which means to stay away from classified information; not to occupy a significant position in the hierarchy - in short, not to “shine” and at the same time be necessary to your boss in the only capacity in which they want to see him, and in no other. Its main goal is to study the personality of Martin Bormann. What place under Bormann offered such opportunities?

The moment has come to remember what role the occult and
magic played in the Reich. The Thule Society, the system of Anenerbe institutions, contacts with Shambhala, the participation of the lamas of the Tibetan sect Agharti... And at the head of all this was the secret mystical Black Order of the SS.

As for the agent-observer - the reader has probably already guessed: the ideal position under Bormann is a personal trustee for the affairs of the order. It can be assumed that he did not have a high degree of initiation, but even this was enough to successfully fulfill his mission.

The question naturally arises: having such a person next to Bormann, did it make sense to go on such a risky (if not adventurous) operation as a substitution? Without a
doubt - yes! Otherwise, it was impossible to penetrate the secrets of the party, secrets known to the end and in detail only to one person - Martin Bormann. These are the secrets of Nazi gold. Having mastered them, it was possible to nip in the bud the plans for the revival of the fascist Reich of the next level. Plans in which Hitler literally invested his entire

your soul.

The systematic creation of hiding places, the opening of bank accounts and other capital investments occurred in the period from the end of 1942 to the beginning of 1945, when the main financial base of secret movements, occult orders, and the top of the NSDAP-SS was laid. The last, short period from February to March passed under extremely unfavorable conditions. It was these later caches (due to the impossibility of maintaining complete secrecy) that turned out to be partially "illuminated". However, not much was hidden in them, figuratively speaking, "the tip of the golden iceberg."

That is why only a replacement operation for Martin Bormann could lead to real results.

Information about the preparation of the operation of such a high degree of secrecy, for obvious reasons, is not available. Nevertheless, despite the uniqueness of such actions, their possibility was always envisaged, which, first of all, required the development of a general concept and measures to prevent information leakage. A golden

cage... Those who have been in it rarely and reluctantly talk about the details of life and the so-called special regime. And about the work performed there - no, no! Only in his own circle, and even then out of habit, calling his former top-secret bosses by their initials ("D.F."), positions ("Chief") or traditionally ("Himself"), and colleagues - by their names and nicknames - without surnames. Something familiar, isn't it?

If yes, then I will immediately note the difference: they lived, God forbid everyone, guarded them - do not wish anyone, isolation from the outside world was somehow compensated by communication with employees, in some cases with the family. Now imagine:

the circle of contacts is narrowed ... to two people! Moreover, one of them is the immediate supervisor, and you can't know anything about the second, except for a range of issues related to your specialty. And you know that none of you will ever get out of here. The time comes - the wards leave,

others come in their place. The same - less often or more often
Happens to bosses too. This can happen to you too.

But the preparation of the "wards" is completely different from the one we usually talk about. we read in "spy" literature or memoirs of professional intelligence officers.

The first thing that awaited the "candidates for the Bormanns" (of course, unaware that they have "competitors") was virtuoso plastic surgery and a special diet, supplemented by a special set of physical exercises: this was how they achieved complete similarity not only of the face, but also of the figure . At the same time - the

study of hundreds of photographs, dozens of dossiers, rare pieces of newsreel. Practicing posture, gait, gestures, facial expressions ... In short, the main task is complete identification with the object being studied. The unique

abilities of Vasily Avdeev presented him with the opportunity to lead this race. What happened to the other

candidates? Most likely, no one will ever talk about it. There are not so many "basic" substitution

options. Here is one of them, according to some
details, most likely.

Early, cold spring of 1943. A planned short-term vacation trip - hunting, walking in the fresh air somewhere in a secluded, picturesque corner. A plentiful meal in a narrow circle, in the spacious hall of a small, ancient and cozy castle. Strong
dream...

Bormann wakes up the next morning with a cold and a severe sore throat. He speaks through a cough, with difficulty and not very clearly. The temperature has risen. Rest is interrupted, Bormann is taken home. But this is not the same Bormann. This is Borman-2. The disease gives him the opportunity to adapt, explains the slight changes in the timbre of the voice. This is one of the versions ...

So, each of us has his own biography. A few lines: date of birth, place of study, work, marital status, party affiliation, a share of merit and a full stop. groove, in

which moves the name of a person. He was, he lived, he did. The scheme is monotonous: both for celebrities and for the townsfolk. Except that some of the walls of the groove are brightly colored, finished to the smallest detail. The biography of others is pale and vague. A few figures, meager facts, rather reminiscent of the fact that life did not take place, that a person, like a chip, picked up by the current, was drawn from one obstacle to another. Something delayed him and forced him to work here, something made him a party member, something made him a participant in the war. And yet, behind this vague pattern, there is a clear line leading from birth to death. That which lends itself to later description.

Describing the life of this man seemed unusually difficult. He had many biographies. More precisely, the first forty-five years of his life have been thoroughly studied. Historians have almost no questions. First date: June 17, 1900. Family: son of a sergeant. The first meager notes: a field artilleryman during the First World War, later a local inspector. First feat: killing his school teacher. First arrest: a year in prison. The consignment. Rally ranks, agitation, party lists. 1929 Wedding. And in the "wedding generals", the witness at the wedding is "Adolf the Lawyer" himself. Many Germans already know this name, they are proud of their Adolf. First child. Then nine more children. Career advancement. Party Gold. First, Hilfskasse is a fund to help those who suffered in street battles with the Reds. Then there is the Adolf Hitler Foundation. Huge financial flows: taxes, donations, compulsory contributions. And constant competitors who need to get ahead, outwit, suppress. New real estate, new countries, human garbage: Slavs, Jews, prisoners. Nicknames: "gray cardinal", "iron chancellor", "Machiavelli at the desk". Title: Secretary of the Fuhrer. Return favor: Hitler's wedding. And in the "wedding generals", a witness at the wedding - he, Martin Bormann. It was April 29, 1945

of the year.

A new life begins on the evening of May 1. Bormann was seen on the street. He got out of the bunker. He was going somewhere. He was sure that he would be saved. He sent a telegram to Karl Doenitz, the new president of the Reich. He hurried to meet him. And then a man named Martin Bormann disappears. However, he is still being tried in absentia, sentenced to death. But who saw this man? Nobody.

But a whole scattering of ghostly figures appears in the light. Each has its own destiny. And each continues the life of Martin Bormann. Who is he now? Manfred Berg? Kurt Gouch? Van Klooten? Jose Pessea? Luigi Boglillo? Eliezar Goldstein? Joseph Yana? Martini Bormagione? Where is he hiding? In one of the

monasteries of northern Italy? Or in Rome, in the Franciscan monastery of Sant'Antonio? Or in a Benedictine abbey in northeastern Spain? Or became a millionaire in Argentina? Or a priest in Poland? Or settled in Chile?

What caused his death (and in the early nineties there was almost no doubt about the fact)? Stomach cancer? Lungs' cancer? Cirrhosis of the liver?

Where is he buried? In the Paraguayan town of Ita? In a nameless grave on the ground Albion? In a luxurious crypt in the Roman cemetery of Verano?

When it was? In 1952 in Italy? Or in 1959 in Paraguay? Or in 1973 in the USSR? In Argentina in 1975? In the UK in 1989? Or maybe he died from a shell explosion on that evening, memorable to all historians, May 1, 1945, and the further contours of the biography are only involuntary fabrications of specialists and sensation lovers?

Over time, out of hundreds of versions that depicted the post-war fate of Bormann, three became seem to scientists the most plausible.

First version. Bormann fled to South America aboard a German submarine. He took with him the "gold of the party", hoping to establish a new - Fourth - Reich away from Europe. He settled on a ranch near the border of Brazil and Paraguay. He owned thousands of square kilometers of land here. Second version. Bormann got out of the

bunker. He hurried to Doenitz to hand over the Fuhrer's will. Suddenly, the Red Army appeared. They stopped him, but, not recognizing, let him go. Bormann was in a hurry, but he again noticed a soldier in front. Russians were everywhere. Borman

confused. It was no longer possible to hide. He took a capsule of potassium cyanide with him when he set out, and now that the situation was hopeless, all that remained was to use it. He swallowed the poison. His body was found, not identified, buried. Bormann continued to live in the minds of people and in the guise of Bormagione, Goldstein, Berg ... And, finally, the third

version. Turning to his

secretary, Else Kruger, he said, "Goodbye!" opened wide

door, went out. Thus, the man whom many called "Hitler's Mephistopheles" disappeared.

The first official to look for him was British Major Richard W. G. Hortin. On October 18, 1945, he was instructed to announce to Martin Bormann, accused of crimes against peace and humanity, as well as war crimes, that on November 20 "in Nuremberg, Germany" a trial of him and twenty-three other Nazi leaders would open.

Major Khortin ordered the printing of 200,000 leaflets with a portrait of the criminal Bormann, who was on the run. Newspapers and radio constantly reminded him of him. But it was all in vain. The accused was never found.

At this time, the leader of the Hitler Youth movement Arthur Axman was arrested in the Bavarian town of Memmingen. During interrogation, he said that he fled from the Reich Chancellery along with Bormann, Ludwig Stumpfegger, Hitler's personal doctor, Hans Baur, Hitler's pilot, and several other close associates of the leader.

According to him, not far from the Weidendamm bridge, they came under heavy Russian fire. Axman tried to take cover in the shell crater. Next to him, in the pit, lay the mighty Reichsleiter Bormann. By morning,

their group had grown to ten people. Everyone tore off their insignia from their uniforms, threw down their weapons and moved west along the railroad tracks. Having already approached the Lehrter station, they noticed Red Army soldiers on the platform. They immediately descended from the embankment down to Invalidenstrasse, and again stumbled upon Soviet soldiers - on the field guard. They mistook them for deserters from the Volkssturm. In the winter of the 45th, people who were not fit for military service were recruited into this militia. No one trained recruits, there were not enough weapons. They were "cannon fodder" and in the days of the battles for Berlin, they fled at the first opportunity. The Red Army soldiers reacted good-naturedly to the unarmed Germans who appeared. They were treated to cigarettes. Smiling, they said the usual password: "War kaput, Hitler kaput."

Bormann and Stumpfegger were wary. They clearly did not trust the Russians. Cigarettes, "kaput", what's next? Arrest? No, until the soldiers come to their senses, we must hurry. And together, "walking faster and faster" (Lang), they rushed towards the Charité - the Berlin University Hospital. A little later, after them, Aksman and his adjutant Gerd Veltsin moved. Soon they spotted their comrades. Those lay right on the road, not far from the station. They didn't move. A few years later, recalling that day, Axman was not so stingy with details: “We knelt down and recognized both Martin Bormann and Dr. Stumpfegger. There could be no mistake. Both were lying on their backs... I turned to Bormann, touched him, began to shake him. He wasn't breathing." Surprisingly, at the Nuremberg Trials, these confessions of Axman were

not paid any attention, although one of the investigators who interrogated him, the British historian Huge R. Trevor-Roper, believed that the head of the Hitler Youth was telling the truth. Obviously, wrote Trevor-Roper, "by oversight" this protocol was simply overlooked. Instead of Axmann, the tribunal interrogated Erich Kempka, Hitler's personal chauffeur.

He said that he saw Bormann for the last time "on the night of the first to the second of May 1945." When asked if the Reichsleiter could have escaped from the city, Kempka replied that it was "almost impossible", because the battle was too strong.

What was Bormann doing when the witness saw him? “The moment I saw him,” Kempka recalled, “several tanks came up from behind. They "took" a group of people, among whom was Bormann. When the Reichsleiter approached the first tank, a shell suddenly hit the car. There was an explosion. The flame escaped just from the side where Martin Bormann was walking. Friedrich Bergold, Bormann's

lawyer, asked the witness: "Did you see that the explosion was

so strong that Martin Bormann died? Kempka:

"Yes. I believe that after an explosion of such force, he died. The

hearings are over. The judges did not heed what was said. The witness could deceive them by helping Bormann escape.

On October 1, 1946, the tribunal sentenced Martin Bormann in absentia. True, the American Francis Biddle, up to the last moment, persisted and offered to abandon the verdict and announce that Bormann had died. However, in the end, he could not stand it and agreed with colleagues who condemned the Nazi, who had not yet been caught, to “death through hanging".

Even in the courtroom, lawyer Bergold will say with annoyance that in the coming years the name of Bormann will become legendary because his fate has remained unclear. Those were prophetic words. ... Soon

Bormann began to meet everywhere. He appeared in Australia, Egypt, Spanish Morocco, Italian Bolzano. In Bayreuth he was seen with the president of the Chamber of Commerce and Industry, in Munich he paid a visit to a certain secret commerce adviser, in Czech Chomutov he led the life of a modest huntsman.

In 1949, Paul Hesslein, a centrist politician who had long since emigrated to Chile, reported that he had met several strange strangers on horseback; among them was Bormann. He recognized him one hundred percent, because "from 1930 to 1933 he often saw him in the Reichstag." As the cavalcade moved away towards the woods, he heard Bormann shout to his companions: "That was Hesslein!"

However, no matter how colorful the story was, it did not inspire confidence. It was quickly remembered that Bormann became a member of the Reichstag only after winning the November 1933 elections. Hesslein himself - contrary to what is reported about him in many articles and books - was not a member of the Reichstag at all, he only happened to sit in the Saxon Landtag in 1920-1922.

So, more and more often, Bormann, who had been buried by Axman, calmly roamed free. Even the decision of the court held in Berchtesgaden in January 1954 could not put an end to his travels and adventures. It was stated that Martin Bormann should be considered dead on May 2, 1945 at 24:00. public interest. Moreover, the deceased continued to rewrite his life.

In 1945-1970, about 6,400 facts were collected, proving that the Reichsleiter led a completely carnal existence: "someone saw, heard, found something." The policemen also worked tirelessly: sixteen times they arrested people who resembled Bormann. However, all these people managed to prove that they had never ruled the Nazi Reich in their lives. Bormann's grave was also found many times. This story should have been sorted out. In 1959, the Berlin judicial authorities opened new proceedings.

Two years later, they handed over the materials on this case to Frankfurt, Fritz Bauer, one of the most tireless hunters of the Nazis. At first, he was convinced that Bormann had survived the "Twilight of the Gods" and was now hiding somewhere "in South America."

Bauer also had his own quite reliable witness - the former SS Standartenführer Werner Heide. This professor of neurology has been hiding from justice for almost a decade and a half, because he was involved in the massacres of the sick and disabled. It was discovered only in 1959. He said that after the war he worked for some time in Denmark, in one infirmary. Later, when the Federal Republic of Germany was formed, he practiced medicine under the name of Dr. Fritz Savade.

In Denmark, he had to help some Nazi bosses. Among them was Borman. Reichsleiter spent several days with him, and then he was transferred somewhere to the south.

These words reassured Bauer. Shortly before that, on May 13, 1960, a certain Clemento Ricardo was kidnapped by Israeli agents right on one of the streets of Buenos Aires. As it turned out, Adolf Eichmann, one of the organizers of the mass extermination of Jews during the war years, was hiding under this name for several years. During one of the interrogations, he allegedly said that Bormann had escaped. “There is no smoke without fire,” Bauer said.

On July 4, 1961, the Frankfurt prosecutor's office issued an arrest warrant. District Judge Opper, who signed the warrant, shared the opinion of the "bounty hunter." There is a danger, the judge stressed, that Bormann "continues to be a fugitive, as he has done since 1945, realizing the gravity of the charges against him."

In the summer of 1965, in order to verify the long-standing testimony of eyewitnesses, excavations were carried out in Berlin, near the Lehrter station. Bormann's remains could not be found. The bodies once examined by Axman, as well as the body seen by Kempka, have mysteriously disappeared. And again they became multiply hypotheses.

Correspondent of the London "Sunday Times" Anthony Terry, according to a certain Erich Karl Widwald, told readers the following story (his article was reprinted by many publications). So, Widwald helped Bormann get out of besieged Berlin. They later moved to South America, with Widwald becoming Bormann's bodyguard. At first, the Reichsleiter settled on a ranch south of the Argentine town of San Carlos de Bariloche, near the border with Chile. Later, he settled near the border of Brazil and Paraguay, on the banks of the Parana River, in the village, which is called the "colony of Waldner-555." There was nothing accidental in this figure. At one time, Bormann was awarded the title of Obergruppenführer of the SS, and Heinrich Himmler presented him with an honorary certificate of a member of the SS number 555.

The "Iron Chancellor" did not leave Berlin empty-handed. He appropriated 350 million marks - the party fund and the Fuhrer's money. He also got another 130 million - the money of the SS. A fabulously wealthy man was hiding in the jungles of South America. These stories pleased the

taste of not only the townsfolk. The Frankfurt investigator was also an attentive reader of the sensational article. Soon Widwald testified. He admitted that he invented everything - the forest colony, and the flight from the city, and the hundreds of millions that went to the one for whom the rope cries. The image of Bormann, barely embodied in the figure of the owner of forests and meadows, in an exotic rancher, melted again. He should not live in Argentina, Paraguay, Chile, because he kept his way to the USSR.

In late 1971, the memoirs of Reinhard Gehlen, the first chairman of the BND, the Federal Intelligence Service, were published, a man who should not fool the public with tales of "sunny Brazil." He mentioned Bormann in passing. Here is a book that was published then, it is called: "Service". It has 424 pages, but we are not interested in twenty-four, not four pages, but only four paragraphs.

Here they are! Solemn opening: "And now I would like to break a long silence that hid one important secret." It will be about "one of the most mysterious stories of our century." Bormann was a Russian spy. The accusation, however, is not new. There were others who suspected the "clerk Machiavelli" of a double game. But never before has a German intelligence officer of such a high rank accused Bormann of espionage. There was a sensation. How was he recruited? What happened to him?

During the war years, Soviet intelligence officers worked in Germany, and "their most famous informant" was Bormann, writes Gehlen. Secret messages were transmitted to Moscow with the help of the only Berlin radio station, which worked uncontrollably. And without the help of Bormann, of course, it could not have done here. After the war, the former Nazi leader, "splendidly disguised, lived in the Soviet Union."

How did Gehlen know about this? He was told by "two reliable informants". He did not want to give their names even during the interrogation carried out by Horst von Glasenapp, an investigator from Frankfurt. Of course, Gehlen had to share his discovery with the then chancellor Konrad Adenauer, but he decided that, "given the political aspects, nothing needs to be done in this matter." A year after these scandalous revelations, ordinary road workers attacked Bormann's

trail. Moreover, this time a guest from the past showed up in Berlin, but he didn't scatter handfuls of coins, didn't wave his "red-skinned passport", but clattered his bones. Laying new cables, workers stumbled upon a skull. The construction site came to a standstill. The police were called. They began to look for the "terrible bone skeleton."

Within two days, on December 7 and 8, 1972, two "relatively well-preserved" (as the prosecutor wrote) skeletons were brought to light. Several more were found later.

fallen teeth and a golden dental bridge.

A painstaking investigation began. Specialists from the Institute of Forensic and Social Medicine, together with dentists from the departmental police clinic, have been studying “skeleton number one” and “skeleton number two” for several months in a row. According to "anthropometric calculations made on the basis of the average size of tubular bones," it was found that in the first case, a person's height during life was "190-194 centimeters." Stumpfegger's height - and the "bounty hunters" were alert - was 1.90 meters. In the

second case, the experts agreed on the figures "168-171 centimeters". According to SS documents, Bormann's height was 1.70 meters. The tension is reaching its peak.

Further examination of "skeleton number one" showed that there was a clear trace of a healed bone fracture in the lower third of the left forearm. Stumpfegger broke his arm in 1923. Studying "skeleton number two", the doctors stated "improper fusion of the right clavicle after its fracture." Bormann's sons confirmed that in 1938 or 1939 their father broke his collarbone in a fall from a horse.

Tiny shards of glass were found on the "jaws of both skulls". Judging by their thickness and shape, we could talk about "fragments of ampoules or flasks." It seems that the dead took the poison, biting through a small ampoule for this.

After examining the jaw of "skeleton number one", the investigators were unanimous: here, on this street, the remains of Dr. Ludwig Stumpfegger were found. In the second case, opinions were divided. Not a single x-ray has survived that captures the teeth of Martin Bormann. Therefore, I had to rely only on the memory of Hugo Blaschke, the doctor who once treated the Reichsleiter. For someone, his words sounded convincing, someone doubted.

Prosecutor Joachim Richter, who led the investigation, was absolutely sure: “The accused, like Dr. Ludwig Stumpfegger, died on May 2, 1945 in Berlin in the early morning hours - between 1.30 and 2.30.” But the writer and former special agent Ladislav Farago had a different opinion. He told the prosecutor that he had undeniable evidence that "torpedoed all the conclusions made by the commission." But Farago never deigned to present these “hard evidence”, although he announced in 1973 that Bormann became a millionaire and lives in Argentina.

Gradually silence reigned around Bormann's name. The ghost of a fugitive Nazi no longer disturbed either the Paraguayan wilds or the Danish cities. It seems that indeed his remains were found by the builders in those December days.

However, in the fall of 1996, another book dedicated to Bormann appeared: Operation James Bond. On its pages, the Reichsleiter did not submit to fate, did not swallow poison "in the early hours." At the last second, he still managed to escape from Berlin. This was stated not by a newspaperman, not by an author of adventure stories, but by a former British agent, already known to us, Christopher Creighton, aka John Ainsworth Davis.

However, the fugitive, saving his life, could be a double. From London to besieged Berlin, as already mentioned, they sent a man who looked exactly like Bormann: the same scars, the same wart, the same dental fillings. They tried to kill him, but he miraculously survived and was making his way that May night through the streets of Berlin. And he died from a shell that exploded nearby.

So, a new twist in Bormann's biography? But where are the hard arguments? How are rumors like this born? On

December 1, 1996, an interesting article appeared in the Italian "Il Manifesto". Lorenzo Grassi, a contributor to this modest, languishing publication, wrote that the real Bormann died in the summer of 1952 in Rome. Naturally, he lived here under a false name. What is the truth here, and what is an attempt to attract new readers, to make a splash? In late 1997,

the American historian Robert Katz completed a book on the "Roman trace" in the fate of Bormann, or someone who looked like Bormann, or someone who did not look like Bormann, or someone who did not exist at all. Robert Katz is an authoritative specialist. His book Murder in Rome, which describes the massacre carried out by the SS in 1944 in the Ardeatian caves, is considered the best study on this topic.

What did Katz offer the public this time? Perhaps the last time he tried

breathe life into Bormann's flying shadow. So the war is over. Bormann survived, but they are looking for him everywhere. And then, using the documents of a soldier who died of malaria during the African campaign, the Reichsleiter deceives fate. Now he is an ordinary soldier, what millions. In post-war Europe, is anyone interested in a cog in the Nazi machine? He's free. He can drive in all four directions. He chooses Rome. A family of aristocrats familiar to him hides the demoted leader. No one suspects what kind of person is hiding in their mansion. Here in Rome, in 1952, Bormann, a man who briefly outwitted death, dies of cancer.

However, the legend was soon recognized: the deceased was called - and for some reason Katz kept silent about this - Kurt Gauch. Under this name he was buried and this name he was given at birth. He led a hectic life, a musician in Uruguay, an accountant in Vienna, a thief in Rome, but always and everywhere he was Kurt Gauch. He was born to him, and he died to him. He really looked like Bormann, but there was nothing else in common between them. Gautsch died in Rome, and Bormann... Let's talk a little more about this book, because its example clearly shows how the biography of a restless ghost is overgrown with legends.

A cruel joke with the historian was played by several people who provided him with "important documents." Well, not exactly documents, but their copies, that is, from the scientist's point of view, "something very insignificant." However, the temptation was great. I wanted to believe these papers, but what about the originals? Well, they were stolen and maybe there will be more. And Robert Katz took the risk of recreating Bormann's life based on

these suddenly revealed facts. That's just the descendants of Bormann for a long time did not want to believe anything. Neither sensational articles nor book revelations interested them. And they tried to put an end to this mysterious story.

As early as 1996, their family lawyer, Florian Bezold, approached Frankfurt Attorney General Hans Christoph Schäfer. He asked, since now it is possible, to conduct a genetic examination of the remains of an unknown man with a height of "168-171 centimeters", found in 1972. The prosecutor, like the Minister of

Justice of Hesse, was not against it. Perhaps it was
the last opportunity to bring complete clarity to the fate of Martin Bormann.

Forensic doctors from Frankfurt and Bern took up the case. However, they failed. It was not possible to isolate DNA from the cell nucleus, because the bones of the unknown were in a deplorable state. A simple and reliable method failed. Is Bormann's secret never going to be revealed? And then

scientists from the Institute of Forensic Medicine at the University of Munich tried to go the other way, much more difficult. They decided to isolate the so-called mitochondrial DNA. Happened! What happened next was no longer difficult. Professor Wolfgang Eisenmenger turned for help to one of Bormann's relatives, an eighty-three-year-old lady, the granddaughter of Amalia Vollborn, who was Bormann's maternal aunt. So at the disposal of scientists were two ampoules of blood. The analysis showed the relationship between an elderly lady who now lives near the Saxon town of Gelnhausen and a man whose skeleton was discovered in December 1972. So it was Martin Bormann.

A quarter of a century ago, the investigator Horst von Glazenapp wrote that the fate of Martin Bormann, like the fate of Kaspar Hauser, "will excite people's imagination for a long time to come." In 1996, the story of Kaspar Hauser was partly cleared up. Employees of the same Munich Institute conducted a DNA analysis and found that the mysterious foundling was not at all - as previously thought - the heir to the Baden dynasty. Two years later, clarity was added to another legend. Martin Bormann became Martin Bormann. He found his body, and with it his true biography. That May night he tried to escape from Berlin. But it was too late, everywhere he met Soviet soldiers. Then, in fear that he was about to be identified and captured, he bit through the capsule with poison and fell dead to the ground. The enchanting "Twilight of the Gods" ended near the gutter. In a long list of myths and legends,

one could, it seemed, put an end to it. Other theories appeared on the pages of the

Western press explaining how Bormann's skeleton ended up on German territory, and at the same time, beautifully

consistent with previous versions. Here is at least one of them. When

Bormann died on the territory of the USSR, it was necessary to finally close his case and keep the secret of Nazi No. 2 forever. For this, the last operation associated with his name was performed. Bormann's body was secretly taken to Germany - since the GDR still existed then - and just as secretly buried in the vicinity of Berlin. And then, after some time, a rumor is spread about exactly where to look for his grave.

The skeleton was safely found and identified. Case is closed. And the real truth seems to be only our descendants will know. Fifty years later...

You and I will have enough for our age and other secrets. Where do you think they might be going? fugitive Nazis from Berlin? One of the answers says: to ... Antarctica!

It is known that in the early spring of 1945, Hitler approved a previously developed plan - the Valkyrie-2 project, which provides for the shelter of the most valuable, secret, esoteric relics of the Third Reich. Among the items most prized by Hitler was the ancient spear, now known as the "Spear of Cassius Longinus". The legend tells that this spear was made of the mysterious "heavenly metal" in the III

millennium BC by a certain Tubal Cain and had amazing properties. At one time, this spear belonged to King Solomon, and in the 1st century BC fell into the hands of Julius Caesar, who, for some heroic deed,

handed it to his best centurion. One of the descendants of the centurion was Cassius Longinus, who, with the help of this spear, interrupted the torment of Jesus Christ on Golgotha.

Since then, according to tradition, the one who wields a spear is capable of fantastic deeds. They also said that "he who owns it and understands the forces it serves, holds in his hands the fate of the world in the name of Good or Evil."

The spear fell into the hands of Charlemagne, who founded the first Reich. For a whole millennium, it passed from one emperor to another, until Napoleon put an end to the first Reich. By this time, the spear of Cassius

Longinus was in Vienna, in the palace of the Habsburgs. Hitler learned about the spear

and the legend about it when he was young. He repeatedly visited the museum, which became the former royal palace, and spent hours looking at the display case with the relic. The researcher Prussakov writes in this connection:

> "... When Austria was annexed to the Fatherland, the Fuhrer immediately appeared at the royal palace and demanded that the Holy Spear be handed over to him. After which "the key to world domination was in his hands", and hardly anyone will deny that Hitler controlled the fate of mankind in many ways in the next seven years. We can say that the spear fulfilled its promise. It did not promise that Hitler would hold power forever.

But, of course, Hitler wanted to securely hide not only and not so much the sacred spear. There were many other, more valuable things - at least take jewelry and compromising documents. Where is the best place to hide them? And here, it turns out that the writer did not know some of the details. In 1938, Germany suddenly discovers an

inexplicable interest in Antarctica. During 1938-1939 two Antarctic expeditions were carried out. Aircraft of the Third Reich made detailed photographs of the territory, previously unknown. They dropped several thousand metal pennants bearing the sign of the swastika, thus "staking out" the territory, which was called "New Swabia". And even began to be considered part of the Reich.

The expedition commander, Captain Ritscher, arrived in Hamburg on April 12, 1939,

report:

> "I have fulfilled the mission entrusted to me by Marshal Goering. For the first time, German aircraft flew over the Antarctic continent. Every 25

> kilometers, our planes dropped pennants ... We covered an area of approximately 600,000 square kilometers. Of these, 350,000 square kilometers have been photographed, and as a result we have a fairly detailed map of the area…"

But why did Germany need a distant and cold territory of 600,000 square kilometers? Analysts were at a loss. In 1943, Grand Admiral Karl Doenitz said: "The German submarine fleet is proud to have created Shangrilla - an impregnable fortress for the Fuhrer on the other side of the world." But then no one gave due importance to the words of the Commander-in-Chief of the Navy of the Third Reich ...

They were remembered in 1951-1954, when the American newspaper National Policy published a series of articles on the subject that Hitler did not die in his bunker in April 1945. Allegedly, his double committed suicide, and the Fuhrer slipped away to Antarctica on a submarine and lived there for a long time in New Bertesgaden. Indeed, it would

take thousands of searchers with ships, planes, helicopters and plus special equipment to locate this base half a century ago. And in our time, when artificial Earth satellites and their equipment are almost constantly loitering over Antarctica and their equipment can be powerless when trying to find a shelter covered with a thick layer of snow and ice. Moreover, no one seems to have specifically set such a task for himself.

Meanwhile, as was reported in one of the newspaper publications, serious preparations began in Germany for the creation of a permanent base in Antarctica as early as 1938. And in the middle of 1940, submarines were already delivering huge quantities of food, clothing, fuel, etc. to the sixth mainland, as well as building materials, tractors, weapons ... And in large quantities - radio equipment.

People arrived, including engineers and scientists. Over the next four years, the construction of some kind of mysterious shelter proceeded at an accelerated pace. "It

seems, reader, that the newspapers were right," says the researcher of the unknown A. L. Kulsky. - "Impregnable fortress" was waiting for the Fuhrer. But he never appeared in the ice of Antarctica. It is now

known that in the Third Reich there was supposedly a top secret formation of German submarines, which received the name - "Fuhrer's Convoy". According to Captain Bernhart, the Fuhrer's Convoy included 35 submarines. In the port of Kiel, torpedoes and other military equipment were removed from them, since they were strictly forbidden to engage in battle during this voyage. But they were loaded with

containers containing valuables and documents, as well as huge stocks of provisions. In Kiel, the submarines received passengers, some even under

type of crew members.

Currently, there is only reliable information about two submarines from the Convoy. Captain "U-977"

Heinz Schaeffer was repeatedly accused of having allegedly transported Hitler to South America! True, he categorically denied this accusation during interrogations conducted by representatives of both the American and British intelligence services.

To give his words as much persuasive as possible, Schaeffer retrained as a writer and wrote a book that was published in 1952 and was called briefly and specifically: "U-977".

It was a boring repetition of what he said during interrogations. The book was written according to the well-known principle: "... walked, slipped, fell, ... woke up ... plaster"! But the special services

knew the business and...

Here is a letter from Captain Schaeffer to his "old comrade" Captain Wilhelm Zursee Bernhart, dated June 1, 1983:

> "Dear Willie, I have been considering whether to publish your manuscript concerning U-530. All three boats ("U-977", "U-530" and "U-465"), participating in

of that operation are now sleeping peacefully at the bottom of the Atlantic. Maybe it's better not to wake them up? Think about it, old comrade! Think also about the light in which my book will appear after what you have told? We all took an oath of secrecy, we did nothing wrong and just followed orders, fighting for our beloved Germany. For her survival. So, think again, maybe it's even better to present everything as fiction?

What will you achieve when you tell the truth about what our mission was? And who will suffer because of your revelations? Think about it!

Of course, you don't intend to do it just for the money. I repeat again: let the truth sleep with our submarines at the bottom of the ocean. That is my opinion... With this I end the letter, old comrade Willy. May the Lord keep our Germany. Sincerely, Heinz.

What is known now in general about the mission "U-530"? What so insistently asked not to disclose even after 40 years Heinz his "old comrade Willy"?

According to Wilhelm Bernhart's manuscript "The Return of the Holy Lance", the situation with the same campaign "U-530" was as follows. At the beginning of April 1945, the Holy Lance and other things, packed in six bronze boxes, were transported to the city of Kiel, and then loaded onto U-530. By this time, there were five passengers on the submarine, whose faces were hidden by surgical bandages.

The captain of the submarine was 25-year-old Otto Wermout, whose family died in the bombing of Berlin. In general, the crew of the submarine was selected in such a way that no one was married - and no one had any living relatives. Wermouth received two personal letters. From Hitler and from Doenitz. According to the prescription, he had to take from each member of the team "a vow of eternal silence." On the night of April 13, 1945, U-530 left Kiel. At a parking lot in Kristiansand, Vermouth received a sealed package. When he opened it, he realized that the flight would be long.

U-530, having reached the African coast, turned to the south-west. Then she went to the Sandwich Islands. Next was Antarctica. Having reached its shores, 16 people descended onto the ice. They had at their disposal a cargo, a map and detailed instructions regarding the ice cave in which they were to hide the "sacred relics".

It was New Swabia ("Queen Maud Land"). This ice cache, indicated on their map, was discovered by the Ritscher expedition in 1938-1939. The group entered the ice cave and carefully stowed the crates containing the St. Lance and Hitler's personal effects. The first stage of the operation, codenamed "Valkyrie-2" was completed. Now it was possible to return to the world and surrender to the mercy of the winners. On July 10, 1945, two months after the end of the war in Europe, U-530 entered the port of Mar del Plata on the surface. As for the submarine "U-977", it is believed that she transported the ashes of Hitler and Eva Brown. How much you can believe such a statement, we already know.

However, according to legend, on April 30, 1945, the bodies of Hitler and his wife Eva Braun were burned in the garden of the Reich Chancellery. When only a pile of bones and a pile of ashes remained of them, the SS men collected the ashes and arranged them in caskets. A small wooden box was brought from Eva Braun's room. Inside it was a small crystal ball that Eva Braun used to predict fate. It is believed that thanks to this ball, she predicted the fate of Hitler back in the 1930s. Believing her, he therefore kept her by his side all these years. After the ashes of Hitler and Eva were neatly arranged in boxes, the SS removed the sheets from the luggage they had brought. Under the sheets were the charred corpses of a man and a woman. They were placed in the same recess in which the cremation of Hitler and Eve had recently taken place. It is known that with two sealed boxes, Arthur Axman (chief of the Hitler Youth) safely left the burning capital. In the Norwegian port, two bronze boxes were transferred aboard the U-977 submarine. In her cargo compartments were two crates, one of which contained the aforementioned ashes. And the other is a container in which, according to the testimonies of some former SS men, Hitler's sperm was contained.

The famous Dr. Mengele, much later, impregnated specially selected Aryan women with the sperm of Nazi bosses. Repeating the well-known path "U-530",

with a call to Antarctica, August 17, 1945
the submarine "U-977" also arrived in Mar del Plata, where it surrendered to the Argentine authorities.

So, if you believe the above, "dear Willy" did not heed the request of "old comrade" Heinz. And somewhere there, in Antarctica, the “relics” mentioned above were kept for decades. True, this version is already very different from the one offered by Vermouth and Schaeffer to American investigators. But does this mean that the second version is final? There are a lot of oddities and inconsistencies even if we take Return of the Holy Spear at face value. First, where did the mysterious passengers of these submarines go? Why were so many products taken? What was the role of the third U-465 in this whole operation? Finally, did U-977 really meet, as former SS officers say, with a Soviet submarine carrying supposedly high-ranking representatives and atomic scientists from the USSR? Did the transfer of technical documentation on German atomic weapons take place then?

Most likely, the Nazi authorities were not at all going to climb so far and into such cold lands. It could well settle closer - on the South American continent. It is said that even five years before the end of the war, the far-sighted Bormann chose Argentina as the "promised land" for a possible evacuation.

The "Fund M" was organized, the funds from which were intended for intelligence activities and to help the Nazis settling in a new country. According to US data, in 1945 there were 400 million dollars in account "M"! Experts believe that in total at least twenty billion dollars were transferred to Argentina!

Considering the numerical strength of the Fuhrer Convoy, we can conclude that there was someone to carry gold and valuables to Argentina and Patagonia! ..

But all this makes the story of the submarines "U-530" and "U-977" even more incomprehensible.

In fact, upon arrival at the place of internment, both Vermouth and Schaeffer, having fallen into the hands of the secret services, gave their first versions, which did not withstand any criticism at all! You have to know absolutely nothing about the personnel of the special services in order to believe that they so easily believed such a "cranberry"! After all, any special service will always find the means to “untie the tongue”. And then it turns out that they simply “swallowed” the most impudent lies, let themselves be fooled?! After all, with

the proposed area of landing on the "Land of the Queen Maud" by the people of Wermouth and Schaeffer, perhaps, one more, according to researchers and analysts, is connected with a much more surprising mystery. We are talking about the mysteriously legendary expedition of Admiral Richard Byrd, known under the code name "High Jump".

"High Jump" is on the list of the most mysterious expeditions of the US Navy, the author of the book "Ghosts of History" A. L. Kulsky believes. Admiral Richard Byrd commanded this expedition. His appointment to this position was far from accidental, since he had been engaged in Antarctic research since 1928.

This is where we come across a very curious fact. The preparation of plans for the High Jump expedition coincided with the end of the interrogations of the former commanders of the German submarines U-530 and U-977 - Vermouth and Schaeffer. But the expedition did not begin soon. Only January 27, 1947. What did the admiral have at his disposal? Turns out it's

pretty impressive. First of all, an aircraft carrier! And in addition to it - 13 other ships, as well as 25 carrier-based aircraft and helicopters. In total, there were more than 4,000 people in the expedition! .. All this armada after some time dropped anchors near the "Queen Maud Land". At first, things went well. The

researchers took about 49,000 photographs, corresponding to the display of 60 percent of the coast. Then something strange happened. Just less than a month later, in February 1947, Operation High Jump was suddenly curtailed. A powerful naval squadron, which had a supply of food for 6-8 months, unexpectedly returned. And from that moment on, the expedition of Admiral Byrd is surrounded by a dense veil

secrecy.

However, in May 1948, the European magazine Brizant published a sensational article stating that the expedition had returned far from being at full strength. That at least one ship, four aircraft and several dozen people were "lost" shortly after the squadron reached Queen Maud Land. It is also known that, upon his return from Antarctica, Admiral

Byrd gave lengthy explanations at a secret meeting of a very high-ranking commission, which included not only representatives of the US Navy command, but also Washington officials close to the US President's entourage. And Byrd allegedly admitted that the termination of the expedition was caused by the actions of "enemy aviation."

The ubiquitous journalists of "Brizant" assured that Bird said literally the following:

> “The United States must take defensive action against enemy fighters flying out of the polar regions, and that in the event of a new war, America may be attacked by an enemy with the ability to fly from one pole to another at incredible speed!”

Some journalists suggested in this regard that during the Second World War the Germans sent ships and planes to Antarctica with special equipment for huge underground factories located there, which created the most modern weapons. At the end of the war, groups of scientists were transported from Germany to Antarctica by submarine. Captains Vermouth and Schaeffer broke down during interrogation

and blurted out something about the polar bases. Then the Americans sent their shock troops, disguised as a scientific expedition, to discover and destroy the secret bridgehead of the Third Reich. Bird's expedition ended in failure, because superior enemy forces stood in its way. It is still unknown what the purpose of the "High Jump" was. But one thing is known for certain. There was a naval battle, which led to

significant losses in the American squadron. During a new naval expedition, which took place a few years later, Admiral Byrd died. In the late 1980s, judging by the film "UFOs in the Third Reich", additional information was received about what happened during the High Jump expedition ... Yes, you guessed it right: a

group of filmmakers turned to people with advanced paranormal abilities, which are called contactees, and those, they say, revealed the secret of Byrd's expedition. The admiral and his team, you see, ran into opposition from aliens who took under their wing immigrants from the Third Reich.

The Nazis seemed to have known them for a long time, and therefore they were able to build a "flying saucer". Moreover, according to some reports, the same aliens allowed the Germans to fly into space and even to ... Mars! I don’t

know about you, but this outcome of events reminds me of “God from the machine”. There was such a stage device in ancient dramaturgy. When the author got so entangled in the intricacies of the plot that he no longer knew how to bring the characters to a happy ending, Jupiter or one of his henchmen appeared on the stage and immediately put things in order. In relation to this case, I will give the

following details. According to the film, three groups of contactees worked in the Third Reich, who received information from

aliens and used it for their own purposes.

So, let's say contactee Maria Otte, together with three assistants, received ... drawings and a description of the "flying saucer"! She, this "plate", of course, was not the "last word" of alien technology. But its capabilities were incomparable with the capabilities of terrestrial aviation. Further, as it was

stated in the film "UFO in the Third Reich", in each of these societies one experimental model was built. By 1939, top-secret test flights of new "apparatus" began. One of the "plates" was additionally equipped

jet boosters, which led her to a disaster that occurred in Norway in the winter of 1940. As for the version regarding

the base in Antarctica, equipped with huge warehouses and even underground factories, even the most notorious liars doubt their existence. Even in their heads for some reason it does not fit that the aliens could put on the sixth continent some kind of energy source such as a nuclear reactor. “Otherwise, such a base requires colossal reserves of fuel, which should have ended long ago,” they lament.

They.

Meanwhile, the existence of such a base in wartime is quite possible to admit. The Germans were experts in building such shelters. Let's say, according to historian Igor Boechin, they managed to set up a "jump" airfield not just anywhere, but in our Arctic. And, based on it, they shot down planes that were ferried from the USA through the Far East under Lend-Lease. The remains of this airfield were accidentally discovered beyond the Arctic Circle only in the 1970s. As for the bases for submarines, back in the First World War the Germans

scattered them all over the world. At one time, Canaris himself did this, at that time he was not yet the chief of the Abwehr. During the Second World War, one of these bases could be located somewhere in the area of Queen Maud Land. I fully admit it. After all, the plans of the Nazis included the construction of much deeper and hidden shelters ... It is known that Hitler had an

obsession with building underground shelter bunkers everywhere. In one of these shelters in the center of Berlin,

he ended his days. But where did this idea come from? It turns out that it was based not only on a fairly sensible idea that only under the ground can you hide from the bombers of the allied forces. No, the Fuhrer had other, rather deep reasons for that.

> “Two theories flourished in Nazi Germany – the icy world theory and the hollow earth theory. These theories are two explanations of the world and man. They approach ancient traditions, justify myths, unite a certain number of truths defended by Theosophists, - writes in his work "The Prophets Fail" our well-known researcher of exoteric phenomena Yu. Ya. Bondarenko. – These theories were expressed with the help of the large scientific and political apparatus of Nazi Germany. They were supposed to drive out of the country what we call modern science. They reigned over many minds in Germany."

Moreover, they predetermined Hitler's famous military decisions, at times influenced the course of the war, and undoubtedly contributed to the final catastrophe. Fascinated by these theories, in particular the idea of a sacrificial redemptive flood, Hitler led the entire German people to disaster. The theoretician of the doctrine of eternal ice was Hans

Herbiger, whom Hitler supported, whom he believed, and whom he considered "one of the three great cosmologists." Hitler and Herbiger, "two great Austrians", met many times. The leader of the Nazis listened to this learned visionary with reverence. Meanwhile, Herbiger did not give anyone a word to insert into his reasoning. He even pulled Hitler sharply enough, he could well say: “Maul zu!” - "Shut up!" He carried the Fuhrer's convictions to the extreme: the German people, in their messianism, were poisoned by Western science,

narrow, weakening, devoid of body and soul. The Doctrine of the World Ice will provide the necessary antidote for its effects. This doctrine destroyed conventional astronomy. It was closely associated with the idea of magical socialism and richly nourished what Jung later called "the striving for the indestructible." Meanwhile, it would seem that Hans Herbiger had every reason to become a completely normal, sane person. He was born in 1860 to a Tyrolean family, studied at the Technological

School in Vienna and trained in Budapest. At first he worked as a draftsman for the designer of steam engines Alfred Kolman, then he entered as a specialist in

compressors to Land in Budapest. In 1894 he invented a new faucet system for pumps and compressors. The license was sold to American and German companies. As a result, Herbiger became the owner of a large fortune. And only the outbreak of the First World War with its inflation reduced this state to zero.

Such a blow of fate, probably, influenced the worldview of the until then quite sane German. Herbiger became interested in the astronomical application of the three states of water - liquid, ice, steam. He claimed to explain by this the whole of cosmography and the whole of astrophysics. Unexpected "illuminations of brilliant intuition" opened for him, as he himself claimed, the doors to a new science, embracing all the rest.

In the summer of 1925, many scientists in Germany and Austria received letters with the following content: “The time has come to choose whether you are with us or against us. Hitler will clean up politics, Hans Herbiger will sweep away false sciences. The doctrine of eternal ice will be a sign of the rebirth of the German people! Beware! Join our ranks before it's too

late!" Hans Herbiger was 65 at the time. He was something of a ferocious prophet, and he looked the part: his huge white beard, sparkling eyes, and habit of not talking, but broadcasting like a loudspeaker, were taken aback by many.

> “Objective science is a pernicious invention, a totem of decadence,” Herbiger said. He, like Hitler, believed that the question that precedes any scientific activity is who exactly seeks knowledge. Only a prophet can claim to be scientific, since only he, by virtue of insight, rises to the highest level of consciousness. As already mentioned, Hans Herbiger could not stand even the slightest hint of contradiction. He was immediately seized with holy fury:
>
> “You trust the equations, not me! he shouted. - How long will it take you to understand that mathematics is a lie that has no value!”

Herbiger was not alone in his views. Another Nazi cosmologist with the eloquent surname Bender argued, for example, that we live on the inner surface of a sphere. The third said that the Earth is flat and this statement prompted the Germans to even send an expedition to Ararat for the ark.

Herbiger acted as the head of the party, he created a movement with his information service, recruiting offices and propagandists. This movement published three huge volumes of Herbiger's teachings, 40 popular books, hundreds of pamphlets.

> “Our northern ancestors gained strength in snow and ice,” proclaimed one such pamphlet, “that is why belief in world ice is a natural heritage of Nordic man. Austrian Hitler kicked out Jewish politicians. Another Austrian, Herbiger, will expel the Jewish scholars. With his own life, the Führer showed that the amateur can rise above the professional. It took another dilettante to give us a complete picture of the universe."

The Herbiger movement published a large-circulation monthly magazine, The Key to World Events. Herbiger managed to win tens of thousands of supporters. He began to play a prominent role in the history of ideas and in history in general. At

first, scientists protested, tried to prove in published letters and articles the absurdity of Hans Herbiger's theory. However, soon after Hitler came to power, the resistance became weaker, although orthodox astronomy was still taught in German universities. Renowned engineers and scientists have subscribed to the doctrine of eternal ice. Such were, for example, Lenard, who discovered X-rays together with Roentgen, the physicists Oberth and Stark, whose research in the field of spectroscopy enjoyed worldwide

fame.

So what is the essence of this "doctrine of ice"? First of all, it draws its strength from the all-encompassing vision of the history and evolution of the Cosmos, explains the formation of the solar system, the birth of the Earth, life and spirit. It describes the entire past of the universe and heralds its future transformations. It answers three main questions: "Who

We? Where did they come from? Where we are going?"

Everything is based on the idea of eternal struggle in endless spaces, the struggle between ice and fire, between the forces of repulsion and attraction. This struggle also reigns on Earth over living matter and determines the history of mankind. Herbiger claimed to have uncovered the Earth's most distant past and its even more distant future. He introduced the most fantastic notions about the evolution of living beings. He overthrew all the existing theories about the history of civilizations, about the emergence and development of man and society. He presented his view of the history of civilization not as a long ascent, but as a whole series of ups and downs. Humans - gods, giants, fabulous civilizations - preceded us hundreds of thousands, if not millions of years ago. Perhaps we will again become what the ancestors of our race were, having gone through cataclysms and extraordinary mutations in the course of history, which develops in cycles on Earth and in Space. The laws of Heaven are the same as the laws of Earth. The universe belongs to the same movement, it is a living organism, and everything is reflected in everything. The fate of people is connected with the fate of the stars. What happens in the Cosmos happens on the Earth, and vice versa.

This doctrine of cycles and almost magical relations between man and the universe was based on ancient prophecies, the occult teaching about the astral, ancient Indian mysticism and demonology.

In a letter to Reichsleiter Ley, Herbiger wrote that, as a young engineer, he "watched molten steel spill onto the wet and snow-covered ground: the ground exploded with some delay and with great force." That's all. From this seed his teaching grew. Briefly, it can be stated as follows: in the sky there was a huge body

with a high temperature, millions of times larger than our present Sun. It collided with a giant planet, which consisted of a cluster of cosmic ice. The mass of ice has penetrated deep into the supersun. Then nothing happened for hundreds of thousands of years. Then there was a giant explosion.

The fragments were thrown so far that they were lost in the icy space. Others either fell back into the central mass or were thrown into the middle zone, becoming planets in our system. There were thirty of them. Gradually they began to be covered with ice.

The moon, Jupiter, Saturn are made of ice, the channels of Mars are cracks in the ice. Only Earth was not completely covered by the cold, the struggle between ice and fire continues on it.

At a distance three times greater than the distance to Neptune, there was at that time a huge ice ring. It is still there now. Astronomers call it the Milky Way because several stars similar to our Sun blaze through it in endless space. As for the photographs of individual stars, the totality of which represents the Milky Way, these are fakes.

The sunspots, which change shape and place every eleven years, come from the fall of ice blocks that have broken away from Jupiter, which makes its revolution around the Sun every eleven years.

Ice and fire, repulsion and attraction are always fighting in the Universe. This struggle determines life, death and the eternal rebirth of the Cosmos. The German

writer Elmar Brugg published a work dedicated to Herbiger in 1952. In particular, he writes: “None of the doctrines representing the universe has brought into play the principle of contradiction, the struggle of two opposing forces, which, however, has nourished the human soul for millennia. The unfading merit of Herbiger is that he resurrected the intuitive knowledge of our ancestors with such power, presenting the eternal conflict of fire and ice, sung in the Edda. He presented this conflict in accordance with the views of his contemporaries. He scientifically substantiated this grandiose appearance of the world, associated with the dualism of matter and the force of repulsion, which scatters, and attraction, which collects.

The moon, according to Herbiger's doctrine, will undoubtedly fall to the Earth. For several tens of millennia, the distance from one planet to another seems to be unchanged. However, the spiral narrows, gradually the Moon approaches the Earth. As a result, the force of gravity will increase. Then the waters of the Earth's oceans will unite in constant tsunamis, they will rise, cover the land, flood the tropics and surround the highest mountains.

All living beings will gradually become lighter and increase in size. space forces

become more powerful. By acting on chromosomes and genes, they will create mutations. New races, animals and plants, giant forests will appear.

Then, even closer, the Moon will explode from the high speed of rotation and become a ring of rocks, water and gas. This ring will spin faster and faster. Finally, this ring will fall to the Earth. And then there will be the Fall predicted by the Apocalypse. Only the best, strongest, chosen people will survive. They will see horrifying pictures of the end of the world. For thousands of years, the Earth, devoid of

satellites, is expected to be layered with new races and civilizations of giants. Everything will start again after the flood and terrible cataclysms. Mars, much smaller than Earth, will eventually reach its orbit. Too big to become a satellite, it will pass very close to the Earth, touch it and fall on the Sun, attracted by its fire. The Earth's atmosphere will be carried away by the gravity of Mars, leave the Earth and get lost in space.

The oceans will seethe, boiling over the surface of the Earth, washing away everything, and the earth's crust will explode. The dead planet, continuing to spiral, will be captured by the icy planetoids floating in the sky, and will become a huge ball of ice, which, in turn, will fall into the Sun. After the collision, the Great Silence, the Great Stillness will come, and water vapor will gather inside the blazing mass for millions of years, a new explosion will occur to create new worlds by the eternal fiery forces of the Cosmos.

Such is the fate of our solar system in the eyes of the Austrian engineer whom the National Socialists called the Copernicus of the 20th century. Fortunately, Hans Herbiger did not live to see the collapse of the Third Reich, which buried its doctrine under its rubble. He died in 1932 and after his death was awarded the title of "Brilliant discoverer, blessed by God." The Herbiger phenomenon cannot

be understood outside the general atmosphere of the "madhouse", which Walter Shearer mentioned when describing the situation in the Nazi bunker, and which surrounded fascism at all its stages. Without the occult hysteria that accompanied the Nazi struggle for power, there would have been no “ice prophet”. However, in fairness, we must

say that he was by no means alone in his
delusions. And the theory of the underworld in general has a long history.

So, in one of the works of the great ancient Greek thinker Anaxagoras (5th century BC), there are words that still cause a fierce debate among scientists. Anaxagoras tells about the emergence of some other world: “And people were composed and other living beings that have a soul. And these people, like us, have populated cities and skillfully made creations, they have the Sun, the Moon and other (luminaries), like ours, and the earth gives rise to many and varied things ... “Maybe he describes life on another planet?

However, such a tempting guess has to be discarded - the model of the cosmos developed by the philosopher does not correspond to it. This model is strictly symmetrical: the flat disk of the Earth, covered by the upper hemisphere of air and supported by the lower one, is surrounded by a rapidly rotating ether. So does not Anaxagoras speak of a world symmetrical to ours, of life flourishing on the opposite side of the earth's disk? This assumption will seem all the more true if we remember that ancient Greek mythology fully allowed the existence of Tartarus, a separate world under the earth. But Tartarus is something dark, gloomy; not without reason did Zeus imprison his sworn enemies, the titans, in it. And Anaxagoras talks about a sunny inhabited world, surprisingly reminiscent of ours. That is why this ancient Greek philosopher (if, of course, we are right in interpreting his words) can be considered one of the first authors of an unusual, amazing hypothesis, which, oddly enough, had its adherents until recently.

April 15, 1818 members of the US Congress, directors of universities and some
major scientists received the following message:

> “To the whole
> world. I declare that the Earth is hollow and inhabited from within. It consists of several

solid concentric spheres placed one inside the other, and has openings at the poles from 12 to 16 °. I undertake to prove the truth of this statement and am ready to explore the interior of the Earth if they help me in this undertaking. ***Clive Sime,***
former
infantry captain."

If you think that the ex-warrior was immediately placed in a psychiatric hospital after this letter, then you are mistaken. After all, Sime, with the immediacy of an amateur, only brought to the extreme the then widespread opinion that our planet is hollow. A few years before him, at the end of the 18th century, the well-known scientist Leslie also proposed to equip an expedition to search for entrances to the underworld. He believed that the inner surface of the Earth, heated by a self-luminous spirit, was inhabited. “Strictly speaking, the emergence of the

hollow Earth model was caused by the need to explain some incomprehensible facts,” writes a well-known journalist and historian Yu. F. Filatov on this subject. - So, Cormuls in 1816 believed that the depression between Dover and Calais was formed due to the shift of the crust (about 500 kilometers thick) of the hollow Earth. And the German professor Steinghauser explained the earth's magnetism and its secular changes due to the existence of some inner planet Minerva, slowly moving in a circular orbit inside the earth's cavity (one revolution in 476–480 years). This point of view was based on the statements of such luminaries as Halley, Franklin, Lichtenberg. But since the Earth is hollow, why not assume that it is inhabited not only from the outside, but also from the inside? So “theories” were put forward, one more exotic than the other ... ”The first thing that comes to mind is a journey into the depths of the Earth,

described by the brilliant pen of Jules Verne. Closer to our days, the same idea was logically substantiated by the Soviet academician V. A. Obruchev. True, he did this not in scientific work, but in the novel Plutonia. The protagonist of this novel, professor of astronomy Trukhanov, comes from the concept

that the core of the planet is made up of hot gases, it is surrounded by magma, and then a solid crust. However, this was the case until the Triassic period. In the Triassic period, and perhaps even earlier, at the end of the Paleozoic, a gigantic catastrophe occurred: a meteorite with a diameter of 250 kilometers fell on Earth, near the North Pole. He broke through the earth's crust and remained inside the planet. Gases burst out, and the underground cavity cooled. Through the hole, Jurassic flora and fauna gradually spread into it. The role of the underground sun - Pluto - is played by a hot celestial projectile.

Although V. Obruchev wrote that he used this hypothesis only to tell in an entertaining way about the animal and plant world of prehistoric times, it is interesting in itself. And if we consider that Obruchev's book was published in 1924, that is, at the time when the first envoys of the Wehrmacht appeared on our territory, then it may well be that this theory, along with them, then migrated to Germany.

However, such an idea could have come to the Third Reich in another way. At the end of the First World War, a young German pilot Bender was captured by the French. In the camp, he accidentally stumbled upon a set of old newspapers "The Sword of Fire".

This newspaper was published by the American Cyrus Teed, a researcher of alchemical literature. “The fact that the part of the earth's surface that I see, bounded by the horizon, is lenticular, is beyond doubt,” he said. “However, it is still far from clear whether this lens is convex or concave, whether the earth’s surface goes down or up beyond the horizon.” Indeed, this dilemma is not so easy to solve - for example, the ancient Egyptians believed that the edges of the Earth were raised. Based on myths and legends, Teed decided: the earth's surface goes up beyond the horizon, and since circumnavigations have irrefutably proved that our planet
is a sphere, then we are on the inner surface of a hollow sphere. So, no need to look for the underworld - we live in it! Having

come to such a paradoxical conclusion as early as 1864, Theed created something like a religion - "Korehism" - and began to publish a small newspaper, The Sword of Fire. After 30 years, he already had more than 4 thousand followers! And among them is the namesake of our Ostap Bender.

Returning to Germany, he seriously took up the study of "korekhism" and contributed to the "theory"; on the outside of the earth is an endless rock. So, the Earth is a colossal bubble in the rock, its diameter is the same as that of the globe in classical cosmology. The layer of air has a length of 60 kilometers, then the atmosphere is rarefied to absolute emptiness to the center, where there is a rounded mass of "primordial matter". Around the mass revolve small-sized sun and moon, as well as luminous particles - planets, stars and galaxies. The sun sets behind the mass - night falls on one of the concavities, the shadow of the mass falls on the moon - a lunar eclipse occurs. In this case, light rays propagate along a curved path, and infrared rays - in a straight line. In the 1930s, Bender's teachings gained wide popularity in Germany. For the layman-burgher, the idea that he lives in the underworld was on the same level of "madness" with the ideas of four-dimensional space and the constancy of the speed of light.

Bender became a victim of his own creation. In April 1942, with the knowledge of the high officials of the Reich fleet, an expedition to the island of Rügen was equipped. It is led by Dr. Heinz Fischer, a well-known specialist in the field of infrared technology. Immediately upon arrival, the members of the expedition directed their radars into the sky at an angle of 45°. In full accordance with Bender's theory, they tried to get an image of the English fleet stationed in Scapa Flow. Of course, the plans for the expedition failed miserably. The former pilot was sent to a concentration camp, where he died.

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Nevertheless, his other idea - the theory of the existence of the underworld - continues be worked out with a tenacity worthy of better application.

The Germans not only built a huge number of bookers, underground factories, but also thought about creating a kind of "universal" shelter in the bowels of the Earth. Moreover, there is an assumption that in order to fulfill their dream, they tried to use, again, one of the inventions of their teachers from the USSR. 19

And the Germans took advantage of the invention of the engineer A. I. Trebelev. “Back in 1937, I, along with other engineers,” the inventor himself recalled, “proposed to create a self-propelled, underground moving apparatus. We then came to the conclusion that on the basis of the latest data of Soviet scientists in the theory of cutting, it is possible to build an effective apparatus for closed excavation of soils.

Further, Trebelev said that the model of an underground boat - “subterrines” - was tested at the Goroblagodatsky mine, having made a tunnel about 40 meters long in the thickness of Mount Blagodat. The crew of the boat was three people. One of them - the driver - was supposed to be inside the boat, controlling its movement; two others - a mechanic and a locksmith - were preparing the apparatus for

work. Judging by the fact that the latest information about the "subterrin" dates back to the beginning of the 50s, its tests did not give favorable results. But this is ours. And who knows what success the stubborn and pedantic Germans could achieve? After all, we borrowed many samples of earth-moving equipment from them.

For the sake of completeness, let's add to what has been said that already after the war, in 1948, another Soviet engineer, M.I. Tsiferov, received a copyright certificate for the invention of an underground torpedo - an apparatus capable of moving independently in the thickness of the earth at a speed of 1 meter per second. (For comparison: the speed of the Trebelev unit is 12 meters per hour.)

Tsiferov proposed a method of drilling using a hidden explosion. To do this, he designed a special drill head, resembling a giant drill. Its cutting edges were two radial slots. This was followed by a powder compartment, in which the charge was located, which exploded from an electric fuse. At the time of the explosion, powder gases

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19 This assumption was recently tested by the NTV special forces team. According to N. Fomenko and his colleagues, they managed to find the remains of a reactive German underground boat. - Approx. ed.

created a pressure of 2-3 thousand atmospheres in the combustion chamber! With great force they burst out of the narrow slots of the head, their jet streams turned the drill. As soon as one checker burned out, a new one was fed from a special compartment through a shutter, similar in design to a gun lock. With the help of such a drill,

as calculations have shown, it is possible to go deep into the Earth for 12 kilometers. Why not more? The rod or cable on which the drill hangs can break at great depths of immersion, unable to withstand its own weight. M. I. Tsiferov also proposed an underground ...

rocket. She was 'upside down
upside down" to burn out and actively push the soil out of the well being made.

To be honest, I don't know where Tsiferov got the ideas for his developments from. Maybe he came up with his own mind. But it is known that people of technology often use foreign ideas as trophies. The same Soviet rocket men from Germany brought a lot of things.

And our idea of creating an underground boat was picked up by the Americans. As early as 30 years ago, they demonstrated a new drilling tool, the nose of which was a powerful heater made of a heat-resistant molybdenum alloy and capable of creating a temperature of about 1000 degrees. With such heating, any crystalline rock, if not melted, then softens. Under the influence of its own weight, the projectile plunges into the rock, like a knife through butter. Its tail part cools and at the same time cements the walls of the trunk; the melted rock forms a strong glassy mass that prevents groundwater breakthrough or rock collapse without additional fastening.

About ten years ago, employees of the Institute of Theoretical Physics and Physics of the Earth proposed a project of a "sinking reactor", with the help of which they hoped to solve the problem of radioactive waste disposal. The essence of the idea is as follows. To begin with, a well is drilled in the usual way with a diameter of about a meter and a depth of several kilometers. Its bottom is clogged with sulfur, and then a two-ton capsule with waste is lowered there. Radioactive radiation heats up the surrounding space, sulfur stimulates the reaction, and the capsule at a speed of 2-3 meters per day will fall into the bowels of the Earth. And after it, you can launch the next one ... So in a few years, using 2-3 wells laid in different parts of the world, you can rid the planet of radioactive waste. "And yet, such projects do not give grounds to talk about the creation of a real

underground boat," you say, and you will be absolutely right. There is really no information about the creation of an operating apparatus. But sometimes their absence is also quite eloquent.

My assumptions were confirmed by a recent publication in Komsomolskaya Pravda. There, in particular, it was stated that "it is already possible to create a torpedo that will travel a couple of kilometers in fairly loose soil." It was further said that it is, of course, difficult to implement a project of a boat that could travel long distances underground, but it is still possible with the help of autonomous energy sources - nuclear and thermonuclear reactors, as well as a laser and ultrasonic emitters adapted to destroy rocks ...

* * *

As for the bosses of the Third Reich, they could well have sanctioned the idea of creating comfortable shelters, even deeper and more secluded than the Fuhrer's famous Werewolf. They could persistently search for entrances to the underworld, where they could take shelter from the storms that raged on the surface.

But if this is so, then they were wrong again. The experience of the Cold War, when many shelters were built around the world, designed even for a direct hit by an atomic bomb, showed that one cannot live in such "survivors" for any long time.

Closed space, the absence of a natural geomagnetic background, completely shielded by reinforced concrete ceilings, has a depressing effect on the human psyche. People endure such an existence for a month or two at most, and then go upstairs. Even if they know that there, on the surface, certain death awaits them. This is exactly what happened, for example, with partisans who tried to fight in the Odessa, Kerch and other catacombs.

Conclusion

“Any enemy - even if he is an enemy three times - is worthy of respect, as, indeed, his works, the ancients considered. Swearing at enemies was regarded as weakness. How the defeated inhabitants of the island of Rhodes did not want to preserve the monument to their shame erected by the enemies - a sculptural group where they are stigmatized by the winner - the queen of Helicarnassus Artemisia, but still they preserved it. It was considered sacrilege to destroy the monument, and it was closed with a high wall, putting up a guard at the entrance for fidelity.

So writes the candidate of historical sciences V. Shpakovsky, and we can only agree with him. And to complain together with the scientist that now destroying monuments has become a kind of fashion. Moreover, we are not even talking about specific cases of vandalism, when now well-known thugs blew up monuments to the long-suffering Tsar Nicholas II. They have already paid for it. This is about something else.

After the Second World War, so-called scientific works began to appear one after another, not to mention numerous books and articles in which the Third Reich was once again leveled to the ground. There were, they say, solid idiots who carried their half-witted Fuhrer in their arms. It would be useful,

perhaps, to recall that these "half-wits" were able to teach the world a lot (let us recall once again at least the fate of the same Wernher von Braun). And even from their defeat, they were able to learn a valuable lesson. We freed ourselves from fascism thanks to him, embarked on the path of democracy and prosperity, now we have reached such a standard of living that we can only envy.

And in the meantime, the command-administrative system triumphed among the winners, “real socialism” flourished, the bitter fruits of which we are reaping today. And I don’t want to remember the so-called “benefits” for our veterans once again. Mockery of people - you can’t call them otherwise ... So why do some of our researchers, instead of a serious historical analysis, still ostracize Wehrmacht soldiers for

their notorious straw ersatz galoshes. (A witty invention, by the way - something was made from “nothing” from improvised material that really saves from frost.) What can we say about other, more serious scientific and technical developments?

I confess honestly: I myself, already finishing this book, suddenly discovered with surprise that the same tank "Tiger", among other things, it turns out, in terms of power density per ton of weight (a very important indicator of any tank) was superior to the IS- 2. And besides, he had effective observation and communication devices, crossed rivers under water, had a barrel purge system that reduced the gas content of the cabin. Such a heavy machine also had a relatively small turning radius, and the speed of the armor-piercing projectile and the rangefinder made it possible to hit targets at a distance of up to 2000 meters. Our tankers could only dream of infrared night vision devices developed in Germany since 1936. Until 1942, this technical innovation was not very popular and

was occasionally installed only on some self-propelled guns. But when G. Guderian appreciated this development and ordered to speed up research, the equipment that appeared already in 1944 made it possible to clearly distinguish targets at a distance of 1000 meters, and shoot at 400 meters to kill.

Such infrared devices were installed on the commander's turrets of the Panther tanks, and the Falke armored personnel carrier with a 60-cm anti-aircraft searchlight equipped with an infrared filter was used to accompany them and illuminate the targets. By the end of the war in Germany, up to 1000 infrared devices were produced per month, and the SS tank units equipped with them, despite the significant superiority of Soviet troops in tanks, were successfully used during the counteroffensive near Lake Balaton in March 1945, where on the very first day fighting managed to advance 60 kilometers. I say this with bitter regret, because it was there that my uncle died.

paternal line. He was awarded for those fights posthumously the title of Hero of the Soviet Union. But he was not even nineteen ... We are

proud of our T-34, KB, IS. But this is what happens when the calculations are made on the basis of reports from the Soviet Information Bureau. It is no secret that official propaganda was not good at underestimating German losses - rather the opposite! Nevertheless, from 1941 to 1945, the Wehrmacht lost 5,190, 7,024, 16,789, 22,595 tanks, respectively, and finally (as of May 6, 1945) - 12,608 tanks. We, having, according to the former Chief of the General Staff M. A. Moiseev, the best tanks in the world, lost about 95 thousand of them during the war - more than 20 thousand annually. Only in 1944 we were able to destroy more than we lost ourselves!

Almost all the warring parties used half-track armored personnel carriers. Our infantry formations gained relative mobility only thanks to the American M3 and the British Whites (despite their many weaknesses). Meanwhile, the Wehrmacht possessed such equipment at the very beginning of the war.

German engineers really copied our M-8 rocket. But they also developed more advanced rockets that are stabilized in flight by rotation. It was such a projectile that later became the main one on the Grads, and the M-8 and M-13 "cruise missiles" safely receded into the realm of legends. A heightened sense of the new was also inherent in German aircraft

designers - many of their developments, as already mentioned, were ahead of their time. They just did not have enough time for their mass production.

So, Heinkel, who developed a simple and cheap "people's fighter" with a Xe-162 jet engine, also tested its version with a swept back wing and a V-tail. It is these wings that are increasingly being used in combat

aircraft of the latest generation.

A lot of original solutions were applied in small arms. The Allies noted the high firepower of the German infantry, armed with single MG-34 and MG-42 machine guns of high rate of fire with belt feed, to which our machine guns were put basically only after the war.

And what about the shortage of anti-tank grenades in the Red Army when bottles with the “Molotov cocktail” were used? Who counted those who suffered from such a dangerous and imperfect weapon during transportation and handling? The same applies to our not so widely known, but still used in the war, ampoule guns - it is still not known to whom they posed the greatest danger. No, it was not because of the good life that the tankers called the SU-76 a "bitch" - the driver was located between the engine and the gas tanks and burned alive at the first hit.

And if all this is so, let's once again pay tribute to everyone and sum up

said.

The Fuhrer turned out to be a worthy student of the leader of all peoples, creatively using his own methods against him. If Stalin had hoped less for his insight and farsightedness, did not want to put into practice the well-known slogan “Now we will fan the world fire to spite the bourgeoisie”, then the Second World War, as such, might not have happened. The Fuhrer would have been locked up in the walls of the Third Reich by joint efforts, and they would have finished off there before he could fan that very world fire. All talk about the German "wonder weapon" is a bluff. Nothing

was invented in the Third Reich

something that would not have been invented a little later (and sometimes even earlier) in another country.

The Germans made the most colossal gap in the production and design of rockets and jet aircraft. However, the leadership of the Third Reich could not use either one or the other weapon. Neither the "Fau" nor the "Messerschmidts" with the "Focke-Wulfs" made a real turning point in the course of the war. On the other hand, German

designers provided real assistance in the formation of the rocket and aviation industries of the USA and the USSR. And for that you should thank them. Children (and

nervous adults, too) should not be frightened with stories like “a little more and…” American and Soviet atomic bombs, and then hydrogen bombs, caused much more damage to the Earth than German nuclear scientists could imagine in their worst nightmares.

All fairy tales about the mysterious X-rays, hyperboloids and "flying saucers", as well as about the construction of mysterious bases with the help of aliens, do not withstand any serious criticism. Everything that we create on Earth, we do ourselves.

We are responsible for this!